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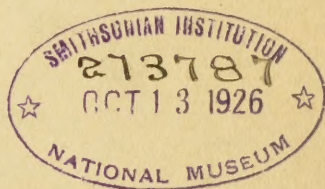
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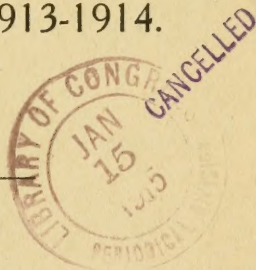
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DEVOTED TO NATURAL HISTORY, PRIMARILY
THAT OF THE PRAIRIE STATES

JULIUS A. NIEUWLAND, C. S. C., PH. D., Sc. D.
EDITOR



VOLUME III, 1913-1914.



UNIVERSITY OF NOTRE DAME
NOTRE DAME, INDIANA

CONTENTS

Erigeron in North Dakota.— <i>J. Lunell</i>	1
Adicea.— <i>J. Lunell</i>	6
New Plants from North Dakota.— <i>J. Lunell</i>	12, 141, 343
Notes on Our Local Plants.— <i>J. A. Nieuwland</i>	14, 41, 98,
	217, 274, 289, 317, 346
Daily Observations of Our Local Birds.— <i>Brother Alphonsus</i>	23
A Correction.....	29
Obituary.....	30
Michigan Bird Life.....	32
A Question of Nomenclature. (Plate I.) <i>S. W. Geiser</i>	33
Song Season of Our Birds in 1912.— <i>Bro. Alphonsus</i>	48
Our Birds in the Spring of 1912.— <i>Bro. Alphonsus</i>	50
Some Midland Dogbanes.— <i>J. A. Nieuwland</i>	53
Evactoma.— <i>J. A. Nieuwland</i>	57
Nesting Habits of Our Birds.— <i>Bro. Alphonsus</i>	60
Midland Witch Hazels.— <i>J. A. Nieuwland</i>	61
Nesting Habits of Our Birds.— <i>Bro. Alphonsus</i>	65
The Generic Name of the White Pine.— <i>J. A. Nieuwland</i>	68
Our Birds in the Summer of 1912.— <i>Bro. Alphonsus</i>	70
Seedless Oranges, A Historical Note.....	76
Certain Violet Names.— <i>Edward L. Greene</i>	79
A New Midland Violet and Some Notes on "Cleistogamous" Flowers. (Plates II. and III.)— <i>J. A. Nieuwland</i>	85
Some Littoral Algae of Puget Sound.— <i>Chas. O. Chambers</i>	91
Migration of Our Birds in the Autumn of 1912.— <i>Bro. Alphonsus</i>	125
An Older Name for <i>Listera</i> .— <i>J. A. Nieuwland</i>	128
New Plants from Various Places.— <i>J. A. Nieuwland</i>	129
Book Note.....	133
<i>Viola arvensis</i> <i>Murr.</i> in Northern Indiana.— <i>J. A. Nieuwland</i>	134
<i>Rosa</i> in North Dakota.— <i>J. Lunell</i>	135
Another <i>Rhus glabra</i> Segregate from Nebraska.— <i>J. Lunell</i>	147
Notes on Fox Elders.— <i>B. F. Bush</i>	148
Notes on Priority of Plant Names.— <i>J. A. Nieuwland</i>	150
Our Birds in the Winter of 1912-13.— <i>Bro. Alphonsus</i>	158
Comparative Migration of Our Birds in Spring.— <i>Bro. Alphonsus</i>	161
<i>Linnaea americana</i> in Indiana.....	166
In the Woods.— <i>Walter L. Hahn</i>	167
Critical Notes on New and Old Genera of Plants.— <i>J. A. Nieuwland</i>	170, 253
Priority of <i>Hierochloa</i> .— <i>R. M. Kaczmarek</i>	198
Notes on Cleistogamous Flowers of Violets.— <i>J. A. Nieuwland</i>	198

Polygonum Longistylum Small, A Synonym.— <i>J. A. Nieuwland</i>	200
Our Birds in the Spring of 1913.— <i>Bro. Alphonsus</i>	201
Studies in Viola.— <i>J. A. Nieuwland</i>	207
Our Birds in the Autumn of 1912.— <i>Bro. Alphonsus</i>	243
Our Birds in the Summer of 1913.— <i>Bro. Alphonsus</i>	248
Forest Arboreta.— <i>Chas M. Dow</i>	255
Some New American Lythra.— <i>J. A. Nieuwland</i>	265
Migration of Our Birds in the Spring of 1913.— <i>Bro. Alphonsus</i>	271
Some Common Birds.— <i>Victor Carpenter</i>	283, 298
Notes on Seedlings. (Plates IV., V, VI, VII, VIII, IX, X)— <i>Richard Vogt</i>	287
Our Birds in the Autumn of 1913.— <i>Bro. Alphonsus</i>	305
A New Variety of Sambucus.— <i>J. A. Nieuwland</i>	310
Field Notes of Western Botany.— <i>Edw. L. Greene</i>	311
Migration of Our Birds in the Autumn of 1913.— <i>Bro. Alphonsus</i>	327
New Species of Ranunculus.— <i>Edward L. Greene</i>	333
The Anatomy of <i>Megalodonta Beckii</i> .— <i>A. V. Hoeck</i>	336
A New Antennaria.— <i>B. F. Bush</i>	352
Notes on <i>Hemerocallis</i> .— <i>N. M. Grier</i>	353
Comparative Migration of Our Birds in Autumn.— <i>Bro. Alphonsus</i>	355

CORRECTION

For *Chenopodium virgatum* Lunell, A. M. N. III. p. 345 (1914), substitute: *Chenopodium ferulatum*. The former name is antedated by a *Chen. virgatum* Thunberg, Nov. Ac. Soc. Sc. Ups. VII. p. 143 (1815). (Japan).

For the same reason for *Chenopodium virgatum junceum* Lunell (l. c.) substitute: *Chenopodium ferulatum junceum*.

J. LUNELL.

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that of the Prairie States

Published by the University of Notre Dame,
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CONTENTS

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Adicea	<i>J. Lunell</i>	6
New Plants from North Dakota.—X.	<i>J. Lunell</i>	12
Notes on Our Local Plants.—II.	<i>J. A. Nieuwland</i>	14
Daily Observations of Our Birds.—I. <i>Brother Alphonsus, C. S. C.</i>		23
A Correction		29
Obituary		30
Michigan Bird Life		32

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JANUARY, 1913.

NO. 1.

Erigeron in North Dakota.—II.

BY J. LUNELL.

When publishing *E. multicolor* in the issue of this journal for July 1912, the manuscript having been written some weeks beforehand, I intimated that I expected to collect during the incumbent season additional material of specimens standing near to this species in general appearance, but with some characters more or less different. The result was richer indeed than anticipated, and before introducing these plants, I only wish to emphasize that whatever the merit is of this paper, it has been enhanced by many valuable suggestions from Dr. E. L. Greene which herewith are appreciatively acknowledged. It is worth adding that in the species where there is a dentation of the leaves, the teeth are as a rule quite small, often needing the aid of a lens to be recognized, and in poorly developed individual plants this dentation is rudimentary and often altogether absent.

In order to draw the difference between the species belonging to this group of daisies, I believe the following key will be helpful:

Clavis Analytica.

- A. Flores radiati 6-8 mm. longi, angusti.
 - a. Folia integra.
 - b. Caules hirsuto-scabri.....1. *E. asper* Nutt.
 - b. Caules pilis mollibus longitudinis inequalis repandis et appressis tenuiter vestiti.....8. *E. asper* var. *appressus*.
 - a. Aliquot saltem folia dentata.
 - c. Folia inferiora plerumque brevia et lata..9. *E. abruptorum*.
 - c. Folia inferiora spatulato-lanceolata.....2. *E. multicolor*.
 - c. Folia inferiora longa, angusta, tenuiter aculeata.

- d. Dentes utrimque 4-5, ampli, attenuato-acuti.....10. *E. oxyodontus*.
- d. Dentes pauciores, dispersi, parvi.
- e. Caules pilis diffusis vel retrorsis vestiti.....11. *E. oligodontus*.
- e. Caules pilis mollibus longitudinis inaequalis repandis et appressis tenuiter vestiti...12. *E. oligodontus* var. *acuminatus*.
- A. Flores radiati 6-8 mm. longi, lati, folia 3-nervata.....13. *E. subcostatus*.
- A. Flores radiati 8-12 mm. longi, lati.
- a. Folia inferiora denticulata.....14. *E. procerus*.
- a. Folia omnia integra.....15. *E. anodontus*

Analytical key.

- A. Rays 6-8 mm. long, narrow.
- a. Leaves entire.
- b. Stem hirsutely scabrous.....1. *E. asper* Nutt.
- b. Stem scantily covered with soft hairs of unequal length, turned upwards and appressed.....8. *E. asper* var. *appressus*.
- a. At least some of the leaves dentate.
- c. Lower leaves generally short and broad..9. *E. abruptorum*
- c. Lower leaves spatulate-lanceolate....2 *E. multicolor*
- c. Lower leaves long and narrow, slenderly pointed.
- d. Teeth 4-5 on each side, large, attenuate pointed.....10. *E. oxyodontus*.
- d. Teeth fewer, scattered, small.
- e. Stem covered with spreading or retrorse hairs.....11. *E. oligodontus*.
- e. Stem scantily covered with soft hairs of unequal length, turned upwards and appressed.....
- 12. *E. oligodontus* var. *acuminatus*.
- A. Rays 6-8 mm. long, broad, leaves 3-nerved...13. *E. subcostatus*.
- A. Rays 8-12 mm. long, broad.
- a. Lower leaves denticulate.....14. *E. procerus*.
- a. All the leaves entire.....15. *E. anodontus*.

8. *Erigeron asper* var. *appressus* var. nov.

Vide Clavem analyticam.

The character mentioned in the key seems to make the only difference from the species, as described in the Midl. Nat. II (p. 254). The variety was collected on low prairie at Dickinson, Stark County, on June 16, 1912, by Mr. Clarence H. Waldron.

9. *Erigeron abruptorum* sp. nov.

Caulis solitarii, simplices, 1 usque 2-(interdum 3 usque 4-) capitati, 20-30 cm. alti, pilis diffusis vel magis minusve appressis copiose usque tenuiter vestiti. Distinctio laminarum et petiolorum foliorum magis conspicua, lamina quidem ad laminas propinquorum latiore. Folia adpresse pilosa, radicalia late usque anguste ovalia, serrato-dentata, apice acuta vel retusa, in petiolos alatos ad longitudinem laminarum prope accedentes sensim reducta. Folia caulina inferiora lanceolata usque late lanceolata, serrato-dentata quoque, apice acutula, in petiolum longum sensim reducta; folia sursum sensim diminuta, anguste lanceolata, longe acuminata, integra, sessilia. Capitula circiter 2 cm. diametro (radiis albis inclusis).

Stem single and simple, 1 to 2-(sometimes even 3 to 4-) headed, 20-30 cm. high, abundantly to scantily covered with spreading or more or less appressed hairs. The foliage of this species is more differentiated into lamina and petiole, the lamina broader in proportion than is the case with its relatives, and appressed-hairy. Radical leaves broadly to narrowly oval, serrate-dentate, acute or blunt at the apex, tapering into winged petioles of approximately the same length as the lamina. Lower stem leaves lanceolate to broadly lanceolate, also serrate-dentate, with acutish apex and tapering into a long petiole; the leaves are gradually reduced in size upwards, narrowly lanceolate, long-acuminate, entire, sessile. Heads about 2 cm. in diameter, including the white rays.

Collected by the writer on top of a high bluff, on June 19, 1912, at Butte, Benson County.

10. *Erigeron oxyodontus* sp. nov.

Caules simplices, plerumque 3-capitati, 30-35 cm. alti, pubescentes, foliis tenuiter vestiti. Folia dimidiaie partis superioris anguste linearia, integra, longe acuminata, dimidiaie partis inferioris

lanceolata, acuminata, in petiolum longum lentissime reducta, 5-7 cm. longa, petiolo longitudine aequali. Folia radicalia et caulina inferiora dentibus 4-5 amplis attenuato-acutis marginaliter utrimque provisa. Capitula 1.5-2 cm. diametro (radii albis inclusis).

Stems simple, usually 3-headed, 30-35 cm. high, pubescent, sparingly covered with leaves, these being narrowly linear, entire and long-acuminate on the upper half, and on the lower half lanceolate, acuminate, very gradually tapering into a long petiole, 5-7 cm. long, with petiole of the same length. Radical and lower cauline leaves with 4-5 large, attenuate-pointed teeth on each side of the margin. Heads small for the size of the plant, 1.5-2 cm. in diameter, including the rays.

Collected by the writer in wet soil on June 19, 1912, at Butte, Benson County.

11. *Erigeron oligodontus* sp. nov.

Caules 1-6, simplices, 1 usque 4-capitati, graciles, 25-35 cm. alti, pilis diffusis vel retrorsis vestiti, restricte foliosi. Folia caulina superiora sessilia, anguste linearia vel bracteis similia, integra, inferiora et radicalia lanceolata usque anguste lanceolata, 5-15 cm. longa (petiolo incluso), ad basin sensim reducta, apice tenuissime aculeata, alia marginibus integris, alia dentibus paucis, insigniter salientibus, parvis, interdum sub lente solum manifestis ornata. Capitula circa 2-2.5 cm. diametro (radiis albis vel rubicundis inclusis).

Stems 1-6, simple, 1 to 4-headed, slender, 25-35 cm. high, covered with spreading or retrorse hairs, sparingly leafy. Upper stem leaves sessile, narrowly linear or bract-like, entire. Lower cauline and radical leaves lanceolate to narrowly lanceolate, 5-15 cm. long (including the petiole), gradually tapering toward the lower end, very slenderly pointed at the apex, some with entire margins, others with few, remarkably salient, small teeth, sometimes only visible under a lens. Heads about 2-2.5 cm. in diameter, including the white or pink rays.

Frequent at Butte, Benson County, in damp meadows. It was collected there by the writer on June 19, 1912.

12. *Erigeron oligodontus* var. *acuminatus* var. nov.

Vide Clavem analyticam.

The scanty pubescence of the stem with upturned, appressed

hairs being the feature of this variety, it was collected by the writer on June 24, 1906, in low meadow at Leeds, Benson County.

13. *Erigeron subcostatus* sp. nov.

Caulis solitarius, simplex, erectus vel leviter ascendens, 1 usque 4-capitatus, circiter 50 cm. altus, pubescentia brevi, tenui, alba, adpressa et foliis 8-12 vestitus. Folia radicalia et caulina inferiora lanceolata usque late lanceolata vel oblanceolata, integra vel remote denticulata, acuminata, in petiolum alatum angustata, adpresse pilosa, venis duobus lateralibus per totam laminae longitudinem conspicue currentibus, etsi in aliquot foliis aliquantulum obscuris. Folia superiora angustius lanceolata, sursum reducta, sessilia, gracillime acuminata, integra. Capitula solitaria vel corymbosa, 2-3 cm. diametro (radiis inclusis), 7-10 mm. alta. Bracteae lineari-acuminatae, late scarioso-marginatae, laxiores, indumento albo appresso vestitae. Radii 130-150, albi, lati.

Stem single, simple, erect or slightly ascending, 1 to 4-headed, about 50 cm. high, with a short, scanty, white, appressed pubescence, and 8-12 leaves. Radical and lower cauline leaves lanceolate to broadly lanceolate or oblanceolate, entire or distantly denticulate, acuminate, tapering into a winged petiole, appressedly hairy, with two lateral veins running quite prominently through the entire length of the lamina, though the venation is somewhat obscure in part of the leaves. Upper leaves more narrowly lanceolate, reduced in size upwards, sessile, slenderly acuminate, entire. Heads single or corymbose, 2-3 cm. across (including the rays), 7-10 mm. high. Bracts linear-acuminate, broadly scarious-margined, with a white, appressed indument, quite loose. Rays white, 130-150, broad, rather short for the disk.

The large heads, the white, broad, rather short rays, and the thin, 3-nerved, partly denticulate leaves are a combination of characters distinguishing this daisy from kindred species. It was collected in shade along the Heart River, a tributary of the Missouri, at Dickinson, Stark County, on June 23, 1912, by Mr. Clarence H. Waldron.

14. *Erigeron procerus* sp. nov.

Caules 1-2, simplices, 2 usque 4-capitati, 35-40 cm. alti, pubescentia densa, paene adpressa pilorum inaequalium provisi. Folia radicalia spatulata, caulina inferiora lanceolata vel anguste lanceolata, omnia acuta, petiolis laminae aequalibus ornata,

denticulata vel aliquot integra. Folia caulina superiora linearia, integra. Capitula 3-4 cm. diametro (radiis albis, latis inclusis).

Stems 1-2, simple, 2 to 4-headed, 35-40 cm. high, with a thick, almost appressed pubescence of unequal hairs. Radical leaves spatulate, lower cauline lanceolate or narrowly lanceolate, all acute, with petioles as long as the laminae, and denticulate, or some of them entire. Upper stem leaves linear, entire. Heads 3-4 cm. in diameter, including the white, broad rays.

Collected on a roadside, in subsoil clay from a ditch, by the writer on June 19, 1912, in the prairie not far from Butte, Benson County.

15. *Erigeron anodontus* sp. nov.

Caulis solitarius, simplex, 3-capitatus, 45 cm. altus, restricte pubescens. Folia radicalia anguste lanceolata vel oblanceolata, 10-20 cm. longa (petiolo longitudinis partes circiter duas e tribus occupante incluso). Folia caulina inferiora anguste oblanceolata, sessilia, 10-15 cm. longa, superiora linearia, 4-7 cm. longa. Folia omnia acuminata, integra. Capitula 3 cm. diametro (radiis latis albis inclusis).

Stem single, simple, 3-headed, 45 cm. high, sparingly pubescent. Radical leaves narrowly lanceolate or oblanceolate, 10-20 cm. long, including the petiole, which occupies about $\frac{2}{3}$ of the entire length. Lower stem leaves narrowly oblanceolate, sessile, 10-15 cm. long. Upper stem leaves linear, 4-7 cm. long. All the leaves acuminate, entire. Heads 3 cm. in diameter, including the broad, white rays.

Collected by the writer in dry pasture land at Butte, Benson County, on June 23, 1907.

Leeds, North Dakota.

Adicea.

BY J. LUNELL.

The genus *Adicea* belonging chiefly to the tropics, represented there by about 150 species, and being most abundant in tropical America, has 4 species in Florida, but only one of these, *A. pumila* (L.) Raf., has a territory extended beyond the northern boundary

of that state. In adding to the species 4 new relatives from the northern and central United States, I have found it convenient to divide them in one black-seeded and one green-seeded group and arrange them under the following key:

A. *Achaenia nigra vel subnigra*.

- a. Planta 4–8 cm. longa, per partem dimidiam superiorem foliosa, simplex, achaenia 1.5 mm. longa and 1.5 mm. lata.....1. *A. fontana*.
- a. Planta 10–30 cm. longa, prope basin sursum ramosa, achaenia 2 mm. longa, 1.5 mm. lata...2. *A. opaca*.

A. *Achaenia viridia*.

- a. Planta 15–25 cm. longa, simplex, per partem dimidiam superiorem foliosa, achaenia 1.5 mm. longa, 1 $\frac{1}{4}$ mm. lata.....3. *A. Nieuwlandii*
- a. Planta 30–60 cm. longa, prope basin sursum ramosa.
- b. Achaenia 1 mm. longa, $\frac{1}{2}$ – $\frac{2}{3}$ mm. lata....4. *A. Deamii*.
- b. Achaenia 1.5 mm. longa, 1. mm. lata...5. *A. pumila* (L) Raf

A. Achenes black or blackish.

- a. Plant 4–8 cm. long, leafy above the middle simple, seeds 1.5 mm. long and 1.5 mm. wide...1. *A. fontana*.
- a. Plant 10–30 cm. long, branching from near the base, seeds 2 mm. long, 1.5 mm. wide....2. *A. opaca*

A. Achenes green.

- a. Plant 15–25 cm. long, simple, leafy above the middle, seeds 1.5 mm. long, 1 $\frac{1}{4}$ mm. wide...3. *A. Nieuwlandii*
- a. Plant 30–60 cm. long, branching from near the base.
- b. Achenes 1 mm. long, $\frac{1}{2}$ – $\frac{2}{3}$ mm. wide....4. *A. Deamii*.
- b. Achenes 1.5 mm. long, 1 mm. wide..5. *A. pumila* (L.) Raf.

1. *Adicea fontana* sp. nov.

Caulis annuus, gracilis, simplex, teres, pellucidus, paene erectus, appresse pilosus vel glabratus, 4–8 cm. altus, recens apice tantum foliosus, postea autem foliis geminis in caule medio vel iuxta eum positis. Quae folia infima parvo sunt, 3–5 mm. diametro, orbicularia, vel basi rotundata vel paene truncata suborbicularia, margine fere integro et petiolis longitudini foliorum aequalibus. Folia omnia opposita et petiolata geminaque 2–4 in summo caule conferta, quae ampliora, 7–20 mm. longa, viva etiam membranacea, ovata, magis minusve

crenata, 3-4 vel interdum 5-dentata, basi cuneata vel rotundata, apice brevi-acuminata, appresse et breviter pilosa, denique glabrata, petiolis 1-5-1-3 longitudinis foliorum ornata sunt. Flores minimi in axillis foliorum congesti, sessiles vel subsessiles, petiolo multo breviores. Calyx dentes lineares tres habet, breviores acheniis subatris (maturis atris), late ovatis, subplanis, 1.5 cm. longis et latis, acutulis.

Stem annual, slender, simple, terete, pellucid, almost erect, or ascendent, appressed-hairy or glabrate, 4-8 cm. high, leafy only at the top when young, later with one pair of leaves on or somewhat above or sometimes even below the middle of the stem. These lowest leaves are small, 3-5 mm. transversely, orbicular or nearly so, with rounded or almost truncate base and quite entire margin, and with petioles as long as the leaves. All the leaves are opposite and petioled, and 2-4 pairs are crowded at the top of the stem, and these are larger, 7-20 mm. long, almost membranous even when fresh, ovate, more or less crenate with 3 to 4 teeth, or sometimes 5, cuneate or rounded at the base, with short-acuminate apex, appressedly short-pilose, at length glabrate, 3-nerved from the base, the pair of lateral nerves branching out to the lower teeth and ending in the 2nd tooth, with one pair of lateral nerves for the uppermost pair of teeth; petioles 1-5 to 1-3 of the length of the blade. Flower clusters small, sessile or subsessile in the axils, and very much shorter than the petioles. Calyx with 3 linear teeth, not as long as the blackish (at full maturity black), broadly ovoid, flattened achenes, which measure 1.5 mm. in length and width, acutish.

This plant may be found on a narrow strip along the boggy margin of a rill, in deep shade, often hidden beneath larger plants, in the woodland of Pleasant Lake, Benson County, North Dakota, and localities with similar natural conditions favoring the growth of this species are very rare within the state. The plants were collected by the writer several times between July 3 and September 2 in the years 1911-12, the latter date furnishing the mature plant which even then, at the close of the season, just immediately before the frost, proved to be of its usual, very small size.

2. *Adicea opaca* sp. nov.

Caulis annuus, simplex, vel ramis brevibus, adscendentibus singulis usque ternis oppositis vel de axillis foliorum orientibus

vestitus, erectus vel in solo incurvatus, 1-3 dm. altus, crassus, exigue et appresse pilosus vel glabratus, pellucidus. Folia opposita gemina 3 caulem et gemina 3 apicem frequenter occupantia, succulenta (siccata membranacea), 2-6 cm. longa, 1-4 cm. lata (ramorum 1-2 cm. longa, 0.5-1.5 cm. lata), ovata, breviter vel nequaquam acuminata, dentibus 5-9 crasse crenato-serrata, cuneata vel basi rotundata, 3-nervata. Florum cymi 5-6 in caule, 1 vel 2 in ramis congesti, in axillis foliorum brevi-pedunculati, petiolis subtendentibus breviores. Pedunculi, pedicelli, sepala hyalino-marginati. Achaenia, aliquantulum aspera vel tuberculata, ovata, subplana, 2 mm. longa, 1.5 mm. lata, acutula.

Stem annual, simple or with 1-3 pairs of short, ascending branches, opposite and growing from the leaf axils, erect or bent on the ground, and in the latter case having the lower side covered with rootlets penetrating the loose soil or the moss, 1-3 dm. high, fleshy, sparingly appressed-hairy or glabrate, pellucid. Leaves opposite, usually 3 pairs along the stem and 3 pairs at the top, watery (after drying membranous), 2-6 cm. long, 1-4 cm. wide (those of the branches 1-2 cm. long, 0.5-1.5 cm. wide), ovate, shortly or not at all acuminate, coarsely crenate-serrate with 5-9 teeth, cuneate or rounded at base, 3-nerved with the lateral nerves ending in the 2nd tooth, with 1 pair of petioles as long as the blades, the others shorter. Flower clusters 5-6 on the stem, 1 or 2 on the branches, short-peduncled in the leaf axils, shorter than the subtending petioles. Peduncles, pedicels and sepals with hyaline margins. Achenes with or without a greenish blush, somewhat roughish or tuberculate, ovoid, flattened, 2 mm. in length and 1.5 mm. in width, acutish.

In measuring the seeds as well as all the other parts of this and the preceding species, care was taken to use only full-grown plants, collected at the end of the season, and seeds that had dropped spontaneously from their receptacles.

The plant grows in damp, but drained soil, well shaded, somewhat distant from the rill where the preceding species thrives. Both of them enjoy luckily such natural advantages that there seems to be no danger of their extermination, as is the case with prairie plants. They don't need to fear the plow or the pasturing cattle which apparently has no appetite for them. They are fairly well established, sufficient in numbers to fill the wants of even a score of botanists, without visible lessening of the supply—

a boon which can not be overestimated, considering the fact that Pleasant Lake, N. D., is their only habitation known, now and perhaps for the future.

A. opaca was collected there by the writer on July 28 and September 2, 1912 (the type specimen made up from plants of the latter date.)

3. *Adicea Nieuwlandii* sp. nov.

Caulis annuus, erectus vel ascendens, simplex, glaber, pellucidus, supra dimidiam partem foliosus. Folia geminorum 5-7. Succulenta (siccata membranacea), 2-4 cm. longa, 1-2.5 cm. lata, ovata, nonnihil acuminata, dentibus 4-7 crasse crenato-serrata, basi rotundata vel cuneata, 3-nervata, exigue et appresse pilosa vel glabrata, petiolis omnibus lamina brevioribus. Florum cymi 5-6, in axillis foliorum brevi-pedunculati. Achaenia 1.5 mm. longa, $\frac{3}{4}$ -1 $\frac{1}{4}$ mm. lata, sive aequaliter viridia sive punctis obscurius viridibus marginaliter vestita.

Stem annual, erect or ascending, simple, glabrous, pellucid, leafy above the middle. Leaves 5-7 pairs, watery (after drying membranous), 2-4 cm. long, 1-2.5 cm. wide (the lowest, especially if there is some rudimentary branching, very small, 1 cm. long or less), ovate, somewhat acuminate, coarsely crenate-serrate with 4-7 teeth, rounded or cuneate at base, 3-nerved, with the lateral nerves ending in the 2nd tooth, appressedly short-hairy or glabrate, petioles all shorter than the laminae. Flower clusters 5-6 in the leaf-axils, short-peduncled. Achenes 1.5 mm. long, $\frac{3}{4}$ -1 $\frac{1}{4}$ mm. wide, either uniformly green or with a dotted darker green lining along the margin. While the size of the achene is almost invariably constant in the other species here described, its width in this species is quite variable.

The late date of its collection (October 19, 1912) surely quaranteed a ripe specimen. It was collected at Notre Dame, Indiana, by Prof. J. A. Nieuwland and was named in his honor.

4. *Adicea Deamii* sp. nov.

Caulis annuus, ramos diffusos vel aequatos etiam propemodum de basi emittens, vel simplex, adscendens vel paene erectus, 30-40 cm. altus, succulentus, glabratus, pellucidus. Folia gemina 7-10, opposita, succulenta (siccata membranacea), 2-9 cm. longa, 1.5-4 cm. lata (ramorum 2-4 cm. longa, 1-2 cm. lata), ovata, brevi-acuminata, dentibus 6-12 crasse crenato-serrata, basi

cuneata vel rotundata, 3-nervata, petiolis lamina brevioribus. Florum cymi 8-10 in caule, 3 vel 4 in ramis, in axillis foliorum graciliter pedunculati et pedicellati. Achaenia 1 mm. longa, $\frac{1}{2}$ - $\frac{2}{3}$ mm. lata, flavido-viridia, aliquantulum punctata, nihilo-minus autum aequalius colorata, apice acuto.

Stem annual, branching from near the base with spreading or even horizontal branches, or simple, ascending or almost erect, 30-40 cm. high, fleshy, glabrate, pellucid. Leaves opposite, 7-10 pairs, watery (after drying membranous), 2-9 cm. long, 1.5-4 cm. wide (those of the branches 2-4 cm. long, 1-2 cm. wide), ovate, short-acuminate, coarsely crenate-serrate with 6-12 teeth, cuneate or rounded at base, 3-nerved with the lateral nerves ending in the 2nd tooth, petioles shorter than the blades. Flower clusters 8-10 on the stem, 3 or 4 on the branches, in the axils of the leaves on slender peduncles and pedicels, about $\frac{1}{3}$ as long as the subtending petioles. Achene 1 mm. long, $\frac{1}{2}$ - $\frac{2}{3}$ mm. wide, yellowish green, somewhat dotted, but still rather uniformly colored, less compressed than in the other species, with acute apex.

The species is represented in my herbarium by two sheets. One was collected on August 24, 1902, in rich, moist woods in Wells County, Indiana, by Mr. Chas. D. Deam, for whom the species is named. It is a large plant, and its having so remarkably small achenes I at first ascribed to its probable immaturity on account of the rather early date for its collection. Later, when I received from Prof. J. A. Nieuwland a sheet, collected at Mineral Springs, Indiana, on the 26th of September, 1912, I noticed how at this ripe old age the size of the achene was not larger, and thus must represent the normal manifestation of the species.

5. *Adicea pumila* (L.) Raf.

Preliminary to all the work here needed, it is necessary to know what *A. pumila* is, and this is especially all-important in regard to the green-seeded species. Through the courtesy and kindness of Dr. Edward L. Greene I received some time ago elaborately selected specimens of fully developed *A. pumila*, collected late in the season in the Potomac Valley. The study of these aided me in attributing to this species the following differential characters, most of them noticeable only in the mature plant.

Stem reaching a length of 6 dm., with later on spreading branches, some of which are often longer than the part of the stem

above their attachment; leaves not unusually becoming 12 cm. long and 7 cm. wide, 3-nerved at base, with the lateral nerves ending in the 1st or 2nd tooth, sometimes even in the 3rd and 4th from above; leaf-margins with 8-16 teeth; petioles very slender, in the middle of the stem longer and toward the apex shorter than the laminae; flower clusters 8 on the stem, 4 on the branches, spreading on long and slender pedicels. Achenes 1.5 mm. long, 1 mm. wide, more or less narrowly ovoid, only slightly acutish and slightly compressed, colored light green and beautifully sprinkled with dark green dots, which are either distinctly separate or closer together, then looking reticulated or like rosaries. This being our largest species, its name suggests a plant of dwarfy dimensions and is a misnomer, indicating that Linnaeus made his description from an immature or poorly nourished specimen.

Leeds, North Dakota.

New Plants from North Dakota.—X.

BY J. LUNELL.

Ranunculus Waldronii sp. nov.

Caules, pedunculi, petioli, margines foliorum, sepala sparsim pilosi, denique glabrati. Caules 1—complures, 7-12 cm. alti, de fasciculo radicularum carnosarum perennium oriundi, floribus paucis—compluribus ornati. Folia radicalia 2-5, anguste—late elliptica usque ovalia, basi cuneata, apice acutulo, sive integra sive apice 2 vel 3 lobis brevibus exornata, petiolo laminae aequali vel duplo longiore. Folia caulina aut integra, anguste elliptica, aut profunde usque basin paene fissa, lobo mediano amplo, latiore (sive integro sive apice 2 vel 3 lobis brevibus exornati), lateralibus vel omnibus lobis linearibus. Petala parva, anguste obovata, 5-8 mm. longa, 3-5 mm. lata, sepala excedentia. Capitula carpellorum sphaerica. Achaenia turgida, glabra, dorso rotundato, rostro brevi adunco provisa.

Stems, peduncles, petioles, leaf margins and sepals sparingly hairy, at length glabrate. Stems 1 several, 7-12 cm. high, from a fascicle of numerous, fleshy, fibrous, perennial roots, few several flowered. Radical leaves 2-5, narrowly broadly elliptical to

oval, with cuneate base and acutish apex, either entire or with 2 or 3 shallow apical lobes, the petiole equalling to twice as long as the lamina. Cauline leaves either entire, narrowly elliptical, or deeply cleft almost to the base, with the median lobe large, broader (entire or with 2 or 3 shallow apical lobes), and the lateral ones linear, or with all the lobes linear. Petals small, narrowly obovate, 5-8 mm. long, 3-5 mm. broad, exceeding the sepals. Head of carpels spherical. Achenes glabrous, plump, dorsally rounded, with a short hooked beak.

If we locate the species in the system, we will find it belonging to the *R. glaberrimus* group, which has the following members: (1) *R. glaberrimus* Hook, of the Pacific coast, which is glabrous, with broad and broadly 3-lobed radical leaves, entire cauline leaves, large petals, 10-12 mm. long, 8-10 mm. broad, broadly obovate, brighter yellow, achenes with a slender beak, herbage becoming black in drying; (2) *R. ellipticus* Greene, of the Rocky Mountains of Colorado, Utah and Nevada to eastern California, which is glabrous, has always entire, acute radical leaves, usually 3-cleft cauline leaves, large petals as in *R. glaberrimus*, often even more rounded, achenes with a short, curved style, and herbage remaining green in drying; and (3) *R. Waldronii*, chiefly of the prairies of eastern Montana and western Dakota, glabrate (or glabrous), leaf-characters generally of *R. ellipticus*, but often at the same time partly coming nearer to *R. glaberrimus*, small and narrowly obovate petals, 5-8 mm. long, 3-5 mm. wide, achenes with a short, curved style, and herbage not changing color in drying, the flower and the whole plant just equalling in size young specimens of our own *R. ovalis* Raf. The size and shape of the petals certainly deserve specific distinction. The type was collected on May 14, 1912 in a moist pasture at Dickinson, Stark County, in the southwestern part of this state. It has been named in honor of its first collector, Mr. Clarence H. Waldron, the junior representative of a North Dakotan family of botanical fame.

Leeds, North Dakota.

Notes on Our Local Plants. II.

BY. J. A. NIEUWLAND.

Class 2. ANGIOSPERMAE.

Subclass 1. MONOCOTYLEDONEAE

J. Ray and A. Haller.

Order 6. PANDANALES.

Britton, Man. 2nd. ed. p. 38, (1905).

Family 11. TYPHACEAE J. St. Hillaire, Expos.

Fam. 1, p. 60, (1805), also Dumort. Comment. Bot. p. 67 (1822). Fl. Belg. p. 162, (1827).

Typhoideae Ventenat, Tabl. II, p. 87 (1794).

Typhae Juss. Gen. p. 30, (1787).

TYPHA Theophrastus, Hist. Pl. 4, 11, Dioscorides 3, 123, Pliny, Nat. Hist. 16, 36 and 66, also 19, 2.

Typha Dodonaeus, Pempt. 604, (1582) Lobelius, Obs. 42, and Icon. 81 (1576) also (1571), Tragus Hist. p. 681 (1543) also Matthioli, Camerarius, Ruellius, C. Bauhin, Morison, Lonicer, etc., etc.

Typha Tour. Els. Bot. 422 (1694) and I. R. H. p. 530; (1700). *TYPHA* Linn. Syst. (1735), Hort. Cliff. p. 439. (1737) Gen. Pl. p. 281, (1737), p. 418 (1754). Sp. Pl. p. 971, (1753).

Typha palustris Ruellius Nat. Stirp. p. 560 (1543) also Caesalpinus, De Plantis (1582). Dodonaeus, p. 604, (1582), also *Typha palustris* Linn., Am. Acad. p. 259 (1749). *Typha aquatica* Tragus. *TYPHA LATIFOLIA* Linn. Sp. Pl. p. 971 (1753).

Common throughout our whole region I have observed it in many localities in every country. No. 9486 U. N. D. Herb., Notre Dame, (Laporte Co.) State Catalogue. Lake Maxinkuckee (Marshall Co.) H. W. Clarke. (Lake Co.) Deam. Millers, Ind. (Lake Co.) Umbach.

Typha media Clusius, Pann. p. 716. (1583).

TYPHA ANGUSTIFOLIA Linn. Sp. Pl. p. 971, (1753): *Massula angustifolia* (Linn.) Dulac Engl. Bot. 21, No. 1456.

(Lake Co.) Deam, (Laporte Co.) Deam. Seen only at Millers, Ind., (Lake Co.) No. 2637 U. N. D. Herb. 2 specimens. Rare.

Neither of these are quite typical. There is only a small space between the staminate and pistillate spikes, but otherwise normal. This species is common around Detroit, Mich. Scarce where I have recorded it, and I have never found it elsewhere in the area embraced by this list.

Family 12. **SPARGANIACEAE** Agardh, Theor Syst.

Pl. 13. (1858).

SPARGANIUM Dioscorides, 4, 21, also Gesner, Matthioli, Lobelius, Dodonaeus, Tabernaemontanus, Morison, J. and C. Bauhin, etc., etc.

Sparganium Tour. Els. Bot. p. 422, (1694), Inst. R. H. p. 530, (1700) *SPARGANIUM* Linn. Syst. (1735) Gen. Pl. 281, (1737), p. 418 (1854). Sp. Pl. p. 971, (1753).

Sparganium eurycarpum Engelm., in A. Gray, Man. 2nd Ed. p. 430, (1856).

The plant grows near Benton Harbor, Mich., Berrien Co.), in abundance. Edges of ponds and back water of the river are covered by large areas of it. It was found also at Millers, Ind. (Lake Co.). No. 9290 U. N. D. Herb. from Benton Harbor. No. 9288, Roadside pool near Mishawaka, (St. Joseph Co.).

Sparganium simplex Hudson, Fl. Angl. 2nd Ed. p. 401, (1788).

No. 474 U. N. D. Herb. Sagunay (Laporte Co.) No. 2152 Millers, Ind. Lake Maxinkuckee (Marshall Co.). H. W. Clarke, Millers and Tolleston, Ind. Higley & Raddin. Pine, Ind. Hill.

Sparganium minimum C. Bauhin. Prod. p. 24, (1620) also. Pin. p. 15.

SPARGANIUM MINIMUM Fries. Sum. Veg. 2, p. 560, (1746).

No. 1807 and No. 2693 Rum Village near South Bend, Ind. (St. Joseph Co.). (Lake Co.) State Cat. Pine, Ind. (Lake Co.) Babcock. Clarke, Ind. (Lake Co.) Hill. also Millers, Ind. (Lake Co.).

Order 7. **HELOBIAE.**

Bartling, Ord. Nat. p. 70, (1830).

Naiadales Britton, Man. p. 40, (1905).

Family 13. **POTAMOGETONEAE** Dumortier, B. C.

Flor. Belg. Stam. p. 163, (1827). *Naiadaceae* Lindley J. Nat. Syst., Ed. 2, p. 366, (1836) in part.

Fluviales Vent. Tabl. II. p. 80, (1794); *Nayadeae* Bartling do. p. 71, also Link, also Rich, A. El. p. 416.

SPIRILLUS J. Gay. Compt. Rend. Acad. Sc. 38, p. 703, (1854)

POTAMOGETON Tour. Els. p. 199, (1644) also Inst. R. H. p. 232, (1700), Linn. Syst. (1735); Gen. Pl. p. 33, (1737); p. 61, (1754); Sp. Pl. p. 126, (1753); and nearly all post-Linnaean authors, but not *Potamogeton* Dioscorides l. 4. c. 99, = *Persicaria amphibia* Linn. Am. Acad. p. 2 and 6. (1749); nor *Potamogeton* Pliny, Nat. Hist. l. 26, 8, v. 33 = *Equisetum Telmateia* Linn. acc. to some; nor *Potamogeton* of early pre-Linnaean authors generally. *Buccaferrea* Bubani, Nuov. Giorn. Bot. Ital. V, p. 316, (1873) also Fl. Pyr. Vol. IV., p. 10, (1901), not *Buccaferrea* Micheli, P. Nov. Pl. Gen. p. 72 (1729) = *Ruppia* (Dillen) Linn, (1753).

Spirillus natans (Linn).

POTAMOGETON NATANS Linn., Pan. Suec. Am. Acad. II, p. 241, (1749); Sp. Pl. p. 126, (1753); *Buccaferrea natans* (Linn.) Bubani l. c.

Bankson Lake near Lawton, Mich. (Cass Co.); Benton Harbor, St. Joseph, Bertrand, New Buffalo, Niles, Mich. (Berrien Co.); Hudson Lake, Ind. (Laporte Co.); Notre Dame, South Bend, Lakeville, North Liberty, Ind., (St. Joseph Co.); Lake Maxinkuckee (Marshall Co.); H. W. Clarke, (Lake Co.) Hill. Pine, Ind. Wheeler. Millers, Ind. (Lake Co.); U. N. D. Herb. No. 2647.

Spirillus amplifolius (Tuckerm).

POTAMOGETON AMPLIFOLIUS Tuckerm. Am. Jr. Sc. 45, p. 38, (1843).

Millers, Ind. (Lake Co.) U. N. D. Herb. No. 2646. Lake Maxinkuckee, H. W. Clarke, (Lake Co.) Hill. Hudson Lake, Ind., Lawton, Mich., Bankson Lake, [Kalamazoo River, (Allegan Co.) Wight].

Spirillus pulcher (Tuckerm).

POTAMOGETON PULCHER Tuckerm. Am. Jr. Sc. 45. p. 38, (1843).

(Lake Co.) Hill.; Pine, Ind. (Lake Co.) W. C. Calkins, U. N. D. Herb. No. 6959; Dune Park, Ind. (Lake Co.), Higley & Raddin.

Spirillus lonchites (Tuckerm).

POTAMOGETON LONCHITES Tuckerm. Am. Jr. Sc. II, 6, p. 226, (1848); *Potamogeton americanus* C. & S.

Lake Maxinkuckee, H. W. Clarke, (Lake Co.) Hill; Pine, Ind. (Lake Co.) Wheeler; Lawton, Mich., Bankson Lake, U. N. D. Herb. No. 9501, [Kalamazoo River (Allegan Co.), Wight.]

Spirillus heterophyllus (Schreb.)

POTAMOGETON HETEROPHYLLUS Schreb. Spicil. Fl. Lips. p. 21, (1771).

Lake Maxinkuckee, H. W. Clarke. (Lake Co.) Hill.

Spirillus lucens (Linn.).

POTAMOGETON LUCENS Linn. Sp. Pl. p. 126, (1753)

Lake Maxinkuckee, H. W. Clarke. Clarke, Ind. (Lake Co.) L. M. Umbach.

Spirillus Zizii (Roth.).

POTAMOGETON ZIZII Roth, Enum. 1. p. 531, (1827).

POTAMOGETON ANGUSTIFOLIUS Berch. and Presl. Rost. 19, (1821); not same of D. C. (1805).

(Lake Co.) Hill.

Spirillus praelongus (Wulf.).

POTAMOGETON PRAELONGUS Wulf. in Roem. Arch. 3, p. 331, (1805).

Lake Maxinkuckee, H. W. Clarke, (Lake Co.) Hill. Bankson Lake near Lawton, Mich.

Spirillus perfoliatus (Linn.).

POTAMOGETON PERFOLIATUS Linn. Am. Acad. II., p. 241, (1749); Sp. Pl. p. 126, (1753).

Lake Maxinkuckee, H. W. Clarke.

Spirillus perfoliatus var. *Richardsonii* (A. Bennett).

POTAMOGETON PERFOLIATUS var. *RICHARDSONII* A. Bennett.

Potamogeton perfoliatus var. *lanceolatus* Robbins, A. Gray Man. Ed. 5, p. 488, (1867), not Blytt. (1861).

(Laporte Co.) Hill.

Spirillus zosteraefolius (Schum.).

POTAMOGETON ZOSTERAEFOLIUS Schum. Enum. Pl. Saell. p. 50, (1801); *Potamogeton compressus* Fries, Novit, Ed. 2, p. 44, (1828); not *P. compressus* Linn., (1753).

Lake Maxinkuckee, H. W. Clarke, (Laporte Co.) Barnes, (Lake Co.) Hill. [Kalamazoo River, (Allegan Co.) Wight].

Spirillus Friesii (Ruprecht.).

POTAMOGETON FRIESII Ruprecht, Beitr. Pfl. Russ. Reichs.

4, p. 43, (1845); *Potamogeton compressus* J. E. Smith, Engl. Bot. 3, pl. 418, (1794); not Linn. (1753); *Potamogeton pusillus* var. *major* Fries, Novit. Ed. 2, 48, (1848). *Potamogeton major* Morong, Mem. Torr. Club. 3, pt. 2, 41, (1893), not *P. pusillus* var. *major* M. & K., (1823).

Lake Maxinkuckee, H. W. Clarke, Pine, Ind., Wheeler. [Kalamazoo River, (Allegan Co.) Wight.]

Spirillus foliosus var. **niagarensis** (Tuckerm.).

POTAMOGETON FOLIOSUS var. NIAGARENSIS Tuckerm. *Potamogeton pauciflorus* var. *niagarensis* (Tuckerm.) Morong, Mem. Torr. Club. 3, 2, p. 39, (1893). *Potamogeton niagarensis* Tuckerm. Am. Jr. Sc. (II) 7, p. 354, (1849).

(Laporte Co.) S. Coulter. Clarke, Ind., L. M. Umbach, Wolf Lake, Hammond, Ind. (Lake Co.) A. Chase.

Spirillus pusillus (Linn.).

POTAMOGETON PUSILLUS Linn. Sp. Pl. p. 127, (1753).

Lake Maxinkuckee, H. W. Clarke, [South Haven, Mich., (Van Buren Co.) L. H. Bailey] [Kalamazoo River (Allegan Co.) Wight].

Spirillus filiformis (Pers.).

POTAMOGETON FILIFORMIS Persoon, Syn. 1, p. 152, (1805).

Lake Maxinkuckee (Marshall Co.) H. W. Clarke.

Spirillus diversifolius (Raf.).

POTAMOGETON DIVERSIFOLIUS (Raf. Med. Rep. (II) 5, p. 354, (1898); *Potamogeton hybridus* Michx., Fl. Bor. Am. 1, p. 101, (1803), not Thuill. (1790). (Lake & Laporte Co.) Hill.

Spirillus pectiniformis (Linn.).

Potamogeton pectiniforme Linn. Am. Acad. II., p. 241, (1749).

POTAMOGETON PECTINATUS Linn. Sp. Pl. p. 127, (1753).

Lake Maxinkuckee, H. W. Clarke; St. Mary's Lake, Notre Dame, Ind., U. N. D. Herb. No. 9215; [Kalamazoo River, Mich. (Allegan Co.) Wight].

Spirillus interruptus (Kitaibel.).

POTAMOGETON INTERRUPTUS Kitaibel, Schultes, Æst. Fl. Ed. 2, p. 328, (1814). *Potamogeton flabellatus* Babington, Man. Bot. Ed. 3, p. 324, (1851).

Notre Dame, Ind. (Lake Co.) Hill. Lake Maxinkuckee, H. W. Clarke.

Spirillus Robbinsii (Oates).

POTAMOGETON ROBBINSII Oakes, Hovey's Magazine, 7, p. 180, (1841).

Lake Maxinkuckee, H. W. Clarke, (Lake Co.) Hill.

Spirillus obtusifolius (Mert. & Roch.).

POTAMOGETON OBTUSIFOLIUS Mert. & Roch. Deutsch. Fl. 1, p. 855, (1823). *Potamogeton compressus* Wahl. Fl. Suec. 1, p. 107, (1824), not *P. compressus* Linn. 1753.

[South Haven, Mich. (Van Buren Co.) L. H. Bailey].

Family 14. **NAYADEAE** Rich. Fl. p. 416.

Bartling, Ord. Nat. Pl. p. 70, (1830), also Link *Naiadaceae* Lindley, Nat. Syst. Ed. 2, p. 366, (1836); *Fluviales* Vent. Tabl. II, p. 80, (1794) in part.

NAJAS Linn., Syst. (1735).

Gen. Pl., p. 278, (1737), p. 445, (1754); Hort. Cliff. p. 437, (1737); Sp. Pl. p. 1015, (1753); *Fluvialis* Vaillant Act. Acad. p. 17, (1719); also Fl. Paris. p. 40, (1723), p. 54, (1727); also Mich. Nov. Pl. Gen. 11, (1729); *Fluvalis* Adans. Fam. des. Pl. II, p. 472, (1763); *Fluvialis* (?) of older authors.

Najas flexilis (Willd.) Rost. & Schmidt, Fl. Sed. p. 384, (1824).

Caulinia flexilis Willd. Abh. Akad. Berl. 95, (1803).

Lake Maxinkuckee, H. W. Clarke.

Family 15. **JUNCAGINEAE** Rich. also Kunth. Endlicher, (1840).

Scheuchzeriaceae Agardh, Theor. Syst. Pl. p. 44, (1858).

Triglochineae Dum. Fl. Belg. p. 141, (1827), also Am. Fam. Pl. p. 61, (1829), ex D. C. Prod.

TRIGLOCHIN C. Bauhin Pinax, p. 6, (1623).

Also Rivinus, Linn. Sust. (1735); Gen. Pl. p. 106, (1737), p. 157, (1754); Sp. Pl. p. 338, (1753). *Juncago* Tour. Els. p. 232. Inst. R. H. p. 266. *Abbotia* Raf. New. Fl. N. Am. I, p. 36, (1836).

Triglochin tricapsularis Linn., Am. Acad. p. 245, (1894).

TRIGLOCHIN PALUSTRIS Linn. Sp. Pl. p. 338, (1753).

Juncago palustris (Linn.) Moench, Meth. p. 644, (1794). *Abbotia palustris* (Linn.) Raf. l. c.

(Lake Co.) Ind. Higley & Raddin, also Hill.

HEXAGLOCHIN (Dum.) Nwd. Nov. Gen.

Triglochin Linn. l. c. etc. in part [*Hexaglochin* Dum. as section under *Triglochin*. Fl. Belg. Stam. p. 141, (1827).

Differt a *Triglochine* capsulis sexlocularibus ovoidis, cum axilla intra capsulam sexangulari minime alata, apicibus sex pedicellis decurrentibus in rachim; cum habitu et multis aliis characteribus generis praecedentis.*

Hexaglochin sexlocularis (Linn.) Nwd.

Triglochin sexlocularis Linn. Am. Acad. II. p. 245, (1749).
HEXAGLOCHIN MARITIMA (Linn.) Nwd.

Triglochin maritima Linn. Sp. Pl. p. 339, (1753). *Triglochin elata* Nutt. Gen. I: p. 237, (1818); *Triglochin maritima* var. *elata* A. Gray. Man. Ed. 2. p. 437, (1852) in part.

Millers, Ind. (Lake Co.) U. N. D. Herb. No. 2656, also (Lake Co.) Hill. Chain Lakes (St. Joseph Co.) U. N. D. Herb. No. 547; also Mineral Springs, Ind. (Porter Co.) East of Bankson Lake; Indiana Harbor (Lake Co.) A. Chase, Lake Maxinkuckee, H. W. Clarke.

SCHEUCHZERIA Linn. Syst. (1735) Gen. Pl. p. 106, (1737) p. 157, (1754), Sp. Pl. p. 338, (1753).

Scheuchzeria palustris Am. Acad. II, p. 245, (1749), Linn. Sp. Pl. p. 338, (1753).

(Marshall Co.) Hessler, Lake Maxinkuckee, H. W. Clarke; Millers, Ind., Bastin; Chain Lakes, Ind. (St. Joseph Co.), I have found it in open spaces in tamarack bogs commonly throughout the region, associated with *Sarracenia purpurea*, *Oxycoccus macrocarpus* or *Drosera rotundifolia*, *Menyanthes trifoliatus* (Buckbean). Other places where I have seen it without collecting it are; Bankson

* Though this plant genus, the type of which is *Triglochin maritima* Linn. Sp. Pl. p. 339, (1753), had scarcely any other good characters than that of a capsule with six rather than three carpels, it could not reasonably be kept in *Triglochin*. So great is this a difference for purposes of classification that we wonder how Linnaeus himself could have retained the plant in his group *Hexandria trigynia*, where one would hardly look for it with such contradictory characters. The habit of *Hexaglochin* and *Triglochin* are the same and for scarcely any other reason could a follower of the Linnaean or any other system have kept the plants together. Many botanists object to habit as a satisfactory character for generic separation and such conservatives can not object. The capsules, however, are very different in habit, excluding *T. striata* which according to Rafinesque may perhaps constitute a third separate genus with characters quite as notable.

Lake (3 miles east) Dune Park, Lakeville, North Liberty, Tamarack (Laporte Co).

Family 16. **ALISMACEAE** D. C. Fl. Fr. 3, p. 181,
(1805), also Dum. Comment. Bot. p. 64 (1823),
Fl. Belg. p. 135 ex Vent.

ALISMA (Pliny) Nat. Hist. l. 25, c. 10 & 77. Valerius Cordus (1561).

Also *ALISMA* Linn. Syst. (1735) Gen. Pl. p. 108, (1737), p. 160, (1754); Sp. Pl. p. 342, (1754); in part. *Plantaginastrum* Heister, Syst. 7, (1748). *Ranunculus* Tour. Els. p. 241, (1694). Inst. R. H. p. 292, (1700), in part. *Damasonium* Dioscorides and Pliny, is a synonym for *Alisma*.

Alisma erecta Linn. Am. Acad. II, p. 245, (1749).

ALISMA PLANTAGO Scopoli, 1771.

Alisma Plantago aquatica Linn. Sp. Pl. p. 342, (1753).*

Lake Maxinkuckee, Ind., H. W. Clarke; Bankson Lake, Mich.; Chain Lakes, Ind. (St. Joseph Co.); St. Joseph's Lake, Notre Dame, Ind.; Rum Village, South Bend, Ind.; Lakeville, Ind.; Benton Harbor, St. Joseph, New Buffalo, Bertrand, Mich.; Hudson Lake, Tamarack, and Sagunay, Ind. (Laporte Co.); (Laporte Co.) Deam, Barnes. Mineral Springs (Porter Co.); Millers, Dune Park, Gary, (Lake Co.); Michigan City, Ind.; C. D. Mell; Millers, Ind., L. M. Umbach.

SAGITTA Pliny, Nat. Hist. l. 21, c. 17 & 68, also numerous authors before Linnaeus.

Sagittaria Gerard (1576), not *Sagittaria* Lobelius.

SAGITTARIA Linn. Syst. (1735), Gen. Pl. p. 289, (1737); p. 429, (1754); Sp. Pl. p. 993, (1753). *Ranunculus* Tour. Els. p. 241, (1694); Inst. R. H. p. 292, (1700).

Sagitta latifolia (Willd.).

SAGITTARIA LATIFOLIA Willd. Sp. Pl. 4, p. 409, (1806).

Bankson Lake, Bertrand, Benton Harbor, St. Joseph, Mich.; Rum Village at South Bend, Notre Dame Lakes, Lakeville, Chain Lakes, Dollar Lake (St. Joseph Co.); Millers & Dune Park, (Lake Co.) Tamarack, Hudson Lake, Michigan City, (Laporte Co.); Mineral Springs, (Porter Co).

* The Linnaean name not being a binary is inadmissible in a strictly binary system. For other synonyms see Am. Mid. Nat. II. p. 101.

Sagitta graminea (Michx.).

SAGITTARIA GRAMINEA Michx. Fl. Bor. Am. 2, p. 190, (1803).

Millers, Ind., U. N. D. Herb. No. 2156. (Laporte Co.) Barnes.

Lake Maxinkuckee, H. W. Clarke. Millers, Ind., L. M. Umbach.

Sagitta rigida (Pursh.).*Sagittaria rigida* Pursh, Fl. Am. Sept. 397, (1814).*Sagittaria heterophylla* Pursh, l. c. p. 397 not *S. heterophylla* Schreb. (1811).

Millers, Ind. Higley & Raddin. Lawton, Mich. (Cass Co.), U. N. D. Herb. No. 2341.

Sagitta engelmanniana (J. G. Smith).SAGITTARIA ENGELMANNIANA J. G. Smith. Mem. Torr. Bot. Club. 5, p. 25, (1894); *Sagittaria variabilis* var. *gracilis* S. Watson, in A. Gray, Man. Ed. 6, p. 555, (1889), not Engelm.

Notre Dame, Ind., U. N. D. Herb. Herb. No. 2547. Lake Maxinkuckee, H. W. Clarke.

Family 17. **VALLISNERIACEAE** Dumort. Anal.

Fam. p. 54, (1829).

Vallisnerieae Dum. Fl. Belg. p. 135, (1827), as tribe under *Hydrocharideae*.*PHILOTRIA* Raf. Am. Month. Mag. 2, p. 175, (1818).*Elodea* Mich. Fl. Bor. Am. I., p. 20, (1803), not *Elodes* Adanson, (1763); *Udora* Nutthall, Gen. 2, p. 242, (1818).**Philotria canadensis** (Michx.) Britton, Sc. II., 2, p. 15, (1895).*Elodea canadensis* Michx. l. c.*Anacharis canadensis* Planch. Ann. Sc. Nat. III. 9, p. 75, (1849).

(Laporte Co.) Barnes; Millers, Ind., Benton Harbor, Mich., Notre Dame, Ind., Rum Village, South Bend, etc., very common.

VALLISNERIA Micheli, Nov. Pl. Gen. p. 12, (1729).Also **VALLISNERIA** Linn. Gen. p. 300, (1737), p. 446, (1743); Hort. Cliff. p. 454, (1737); Sp. Pl. p. 1015, (1753).**Vallisneria spiralis** Linn. Sp. Pl. l. c. (1753).

Lake Maxinkuckee, H. W. Clarke,* (St. Joseph Co.) Ind. Barnes.

(To be continued.)

* The citations attributed to H. W. Clarke, L. H. Bailey, L. M. Umbach, A. Chase, Wight and some by Hill and others were taken from specimens deposited in the U. S. Herbarium in the Smithsonian Institution, where through the kindness of Dr. J. N. Rose, I was enabled to examine the specimens during the summer vacations of the last three years.

Daily Observations of Our Birds.—I.

BY BROTHER ALPHONSUS, C. S. C.

SEPT. 4, 1912.

5:30 a. m.—Many Swifts and two Martins flying about a church steeple. The Martins looked large compared with the Swifts.

7:30 to 8:30 a. m.—Jays were numerous and noisy. A few notes of a Song Sparrow. Saw a Grackle and a Dove. Warbling Vireos plentiful and in full song. Saw a Baltimore Oriole—no note. Many Indigo Birds—counted seven sitting on a fallen branch—all brown. Note of Downy Woodpecker. A few notes of the Goldfinch. Flicker's call-note. A few notes of the Pewee. A note somewhat similar to the White-breasted Nuthatch's, but sufficiently different to make me look carefully for the bird. In a minute out flew a Red-breasted Nuthatch—the first arrival of this species from the north. Two Catbirds in bushes; heard call-note.

4:45 to 5:15 p. m.—A few Robins, and many Grackles in tops of trees. A Red-headed Woodpecker resting on top of a cross on a tower; the bird flew out after a passing insect. Note of young Goldfinches.

SEPTEMBER 5, 1912.

5:30 a. m.—Many Swifts and a few Robins seen.

7:30 to 8:30 a. m.—Jays plentiful; heard several different call-notes and their bell-like note. Saw some Robins and one Song Sparrow. A Grackle flew overhead. Two Kingfishers flew out over the lake. Warbling Vireos not so much in evidence as yesterday, but still in song. Indigos numerous. Goldfinches here and there. Note of Flicker. Saw first Yellow-legs this month.

4:15 to 5:15 p. m.—Hawk-note of Jay. Call-note of Robin. Note of Grackle. Note of Screech Owl at 5:10. Saw a few Swifts. Song of Warbling Vireo. Indigo call-note. Tree toad note of Red-headed Woodpecker. Notes of Downy Woodpecker, White-breasted Nuthatch, Goldfinch. Saw and heard a Flicker.

7 p. m.—Note of Killdeer.

SEPTEMBER 6, 1912.

5:30 a. m.—Call-note of Robin. Saw several Grackles.

7:30 to 8:30 a. m.—Jay note. Saw one Song Sparrow. Grackles seen and heard. One Dove seen. Warbling Vireo still in full song. Indigo call-note. Catbird's call. Note of White-breasted Nuthatch. Call-note of Goldfinch.

5:15 to 5:45 p. m.—Notes of Jay, Robin, White-breasted Nuthatch. Two telephone wires lined with Cowbirds for about 100 feet. The birds were perched close together, the males and females black and brown respectively. Many others in company with many Grackles were bathing just beneath at the edge of a lake. I have observed this bathing of Cowbirds before at this time of the year. This was the first time I had seen any of this species since August 15. Saw one Song Sparrow—no notes since the 4th inst. A few Swifts in sight. Two Flickers in the path ahead of me.

6:45 p. m.—Note of Killdeer.

SEPTEMBER 7, 1912.

5:30 a. m.—Call-notes of Jay and Robin.

7:30 to 8:30 a. m.—Caw of Crow—first since Aug. 31. A variety of unmusical notes from a Jay. Call note of Robin. Grackles seen and heard. Warbling Vireo's note. Saw one of this species eating a worm in a sycamore tree. Indigo call-note. Unmusical notes of Catbird. Call-notes of Goldfinch, Flicker.

4 to 5 p. m.—Call-notes of Jay, Robin, Grackle, Indigo Bird, Catbird, Goldfinch.

7 p. m.—Note of Killdeer.

SEPTEMBER 8, 1912.

5:30 a. m.—Saw Swifts and heard Robins.

7:30 to 8:30 a. m.—Call-notes of Jay and Robin. Saw one Song Sparrow—no note. Note of Grackles. Startled a Dove. Few feeble notes of Warbling Vireo. Call-notes of Indigo Bird and Catbird. A shrill note and tree toad note of Red-headed Woodpecker. Saw one Pewee—no note.

4:15 to 5:15 p. m.—Call-notes of Jay, Song Sparrow, Grackle, Flicker. Saw a Dove. Caw of a Crow.

7 p. m.—Note of Killdeer. Call-note of Robin.

SEPTEMBER 9, 1912.

5:30 a. m.—Call-notes of Jay and Robin.

10 to 10:45 a. m.—Call-notes of Jay, Robin, Grackle. A few notes of Warbling Vireo. Loud note of White breasted Nuthatch. A Pewee—song has ceased.

4:45 to 5:15 p. m.—Call-notes of Jay and Robin. A few Grackles seen and heard. Saw several Swifts. Note of young Goldfinch.

SEPTEMBER 10, 1912.

8 a. m.—Call-notes of Jay, Robin, Grackle. Feeble notes of Warbling Vireo. A few Swifts above a building.

5 to 5:30 p. m.—Grackles and Cowbirds very numerous, perched on dead branches at the top of a tall poplar. Jays and Robins calling here and there. Flicker's note frequently heard.

SEPTEMBER 11, 1912.

5:30 a. m.—Saw a flock of Grackles wheeling above the trees.

10 a. m.—Bell-like note of Jay. Call-note of Robin.

4 to 5 p. m.—Caw of Crow. Jay-note. Grackles seen. A few Swifts high over buildings. A Brown Thrasher flew into an apple tree—first seen since Aug. 26. A Herring Gull wheeling and calling over a lake.

7 p. m.—Note of Yellowlegs, repeated loudly.

SEPTEMBER 12, 1912.

5:30 a. m.—Heard Swifts outside a window.

9 to 9:30 a. m.—Jay-note repeated loudly by two birds. Call-note of Song Sparrow. Feeble note of Warbling Vireo. Two distinct call-notes of a Brown Thrasher. Caw of Crow. Call-note of several Bluebirds—first since Aug. 11. A Kingfisher flew low over a lake and uttered its note while rising to alight in a tree.

6 p. m.—Swifts seen.

SEPTEMBER 13, 1912.

8:45 to 9:30 a. m.—Caw of Crow. Jay-note. Call-note of Robin. Catbird call-note. Saw two Pewees. First Pine Warblers arrived from the north. Heard their call-note.

3:15 to 4 p. m.—Call-notes of Jay, Robin, Song Sparrow. Grackles in flocks.

SEPTEMBER 14, 1912.

8:45 to 9:30 a. m.—Caw of Crow. Loud calls of a Jay. A large flock of Grackles came into a grove and began to chatter. Saw a Catbird—silent. A Downy Woodpecker climbed around a slender branch as cleverly as a Chickadee. Loud note of White-breasted Nuthatch. Call-note of Goldfinch. Note of Flicker; one flew out of a tree. Deep note of Cuckoo. Pine Warblers plentiful and active in tree tops; heard their call-note.

4:30 to 5 p. m.—Call-notes of Robin, Jay and Kingfisher.

SEPTEMBER 15, 1912.

11 to 11:30 a. m.—Call-notes of Jay and Grackle. Unidentified Warblers seen.

4 to 5 p. m.—A few Grackles and Cowbirds on the dead branches of a poplar. Flock of Crows noisy in a nearby grove. A small number of Swifts seen. Heard a White-breasted Nuthatch.

SEPTEMBER 16, 1912.

8:30 to 9:30 a. m.—Jay-note always in ear-shot. Notes of Grackle and young Goldfinch. White-breasted Nuthatch heard here and there. A number of Pewees seen, and call-note heard once. Black-throated Green Warbler arrived; call-note of same.

2:15 to 3:15 p. m.—A flock of Grackles flew overhead. Note of White-breasted Nuthatch. A Yellow-billed Cuckoo, which remained still for a minute and then changed its position to a nearby branch. Here the bird saw a worm, which it caught and began to eat. Before finishing, the Cuckoo flew to another tree and was lost to sight.

SEPTEMBER 17, 1912.

8:30 to 9:30 a. m.—Saw a Song Sparrow; heard its call-note. A Dove flew overhead. A House Wren seen and its call-note heard. Catbird call-note. Note of Downy Woodpecker. Saw a Wood Pewee.

SEPTEMBER 18, 1912.

7:30 to 8:15 a. m.—Cawing of Crows. Note of Grackle. Saw a single Swift. Call-note of Bluebird.

3:30 to 4:15 p. m.—Jay-note. A Cowbird seen.

SEPTEMBER 19, 1912.

9 to 10 a. m.—Saw two Jays—rather quiet. Several Swifts seen. One Redstart flitting in a tree; first seen since spring.

4 to 5 p. m.—Note of Meadowlark—first heard since July 17; first seen since Aug. 1. A flock of Robins flew overhead.

SEPTEMBER 20, 1912.

5:15 a. m.—Saw three Robins and heard call-note of others.

4:30 to 5 p. m.—Jay-note. A Robin calling loudly. Cowbirds very numerous on the dead branches of a tall poplar. Their note thin and uttered in chorus. The tree top was crowded for ten minutes, when many departed. While the branches were thickly covered, some of the birds moved frequently. Among

the Cowbirds were a few Grackles. A few Swifts above the poplar.

SEPTEMBER 21, 1912.

9 to 9:45 a. m.—Saw a Jay and heard its call frequently. Call-note of Song Sparrow and Killdeer. A Kingfisher heard ahead of me and seen flying when I had advanced a short distance. Indigo call-note. Young Goldfinch heard. Black-throated Green Warbler high up in an oak.

4:30 to 5 p. m.—Jays calling. Saw a White-breasted Nuthatch.

SEPTEMBER 22, 1912.

11 to 12 a. m.—A Jay seen. Several Cowbirds were heard, hidden in a maple tree. In order to see them I had to go under the tree. Two notes were heard—a bubbling note and part of a whistling note. Call-note of Goldfinch.

4:30 to 5:30 p. m.—Jays calling. Call-note of Robin. Song of two Meadowlarks. Grackles numerous and noisy in an elm grove. Note of Killdeer. Several large flocks of Cowbirds passed, one close behind another. The birds alighted in a grove ahead of me and when I arrived in the grove, which was near a lake, I found many of them drinking. They came one by one to the edge of the lake, but left in small flocks, the black and brown of the males and females plainly visible. In drinking some of the birds rested on matted weeds at the surface of the water. A large number of Swifts were flying, some high and others low, over the lake. Those flying low would strike the water now and then, making a splash. This was the first time I ever remember to have seen Swifts bathing. Why was this my first observation? Perhaps because Swifts only bathe toward evening, and I may never have been near a lake just at the opportune time to witness the performance.

SEPTEMBER 23, 1912.

Crows in a grove very noisy. Jays calling. Call-note of Robin and Song Sparrow. A Kingfisher dropped into the water and returned to a tree nearby, but shifted its position twice, making it impossible to see whether the bird caught a fish or not. Note of young Goldfinches, in the top of an elm; undulating note of old bird. Several Black-throated Green Warblers in walnut trees; note, very low. Another species of the Warbler family, with faint chestnut on sides and two white wing bars; the undeveloped plumage making it difficult to say if it was a Chestnut-sided or a Bay-breasted Warbler.

4 to 4:30 p. m.—Jays calling. Meadowlarks singing loudly. Killdeer note. Call-note of Robins; one seen.

SEPTEMBER 24, 1912.

6:30 a. m.—Swifts flying high.

9:15 to 10 a. m.—Jays calling. Call-note of Robin; saw two. Song Sparrow in song; saw many in a vegetable garden. Killdeer note. Note of White-breasted Nuthatch. Yellow-billed Cuckoo sitting in a mulberry tree.

3:45 to 4:30—Jays making a variety of noises. A few Swifts seen.

SEPTEMBER 25, 1912.

6:30 a. m.—Swifts seen.

8 to 8:30 a. m.—Jays seen and heard. Note of Song Sparrow repeated. One Grackle in the top of a poplar. Killdeer note in several places; saw one bird. Notes of old and young Goldfinches. A Phoebe in a birch tree; first seen since July 30—an absence of 56 days.

3:45 to 4:30 p. m.—Jays calling. Notes of Grackle, Killdeer. Cowbirds perched on dead branches of a poplar, uttering a thin note, and changing their position frequently. Call-note of Goldfinch.

SEPTEMBER 26, 1912.

11 to 11:45 a. m.—Jay-note.

4 to 4:45 p. m.—Passed the poplar where Cowbirds are seen, but none were in the tree. When I returned a number were on the dead branches, and, as usual, moving and uttering a low thin note. Heard Grackles here too. Note of Meadowlark, Downy Woodpecker. Call-note of Song Sparrow. White-throated Sparrow arrived—5 days earlier than last autumn.

SEPTEMBER 27, 1912.

11 to 11:30 a. m.—Two Jays flying. Call-notes of Song Sparrow and Goldfinch. Note of Meadowlark.

3:45 to 4:30—Many Jays flying about along a country road lined with trees. Killdeer note. Saw Meadowlarks—in song. Cowbirds absent at 3:45; present in the poplar at 4:30; Grackles heard here also. Saw Goldfinches and heard their call-note. A note of the Flicker. White-throated Sparrows plentiful in low land covered with bushes; heard their call-note. Caw of Crows.

SEPTEMBER 28, 1912.

9 to 10 a. m.—Crows cawing. Jays calling. Call-note of Song Sparrow. Notes of Meadowlark and Grackle. A few Swifts seen. Call-note of Goldfinch; note of young birds. A White-breasted Nuthatch seen. Note of Downy Woodpecker. Golden-crowned Kinglet arrived—3 days earlier than last autumn. The Snowbird arrived—12 days later than last fall.

3:45 to 4:30 p. m.—Saw some Crows. Jays calling. Call-note of Song Sparrow. Note of Meadowlark. Call of Robin.

SEPTEMBER 29, 1912.

11 to 11:45 a. m.—Jays calling. Saw one Robin Feeble notes of a Song Sparrow. Note of Downy Woodpecker; saw the bird on a telephone pole. A Goldfinch in autumn plumage.

3:30 to 5 p. m.—Caw of Crow. Call of Bluebird. Song of Meadowlark. A flock of Vesper Sparrows—first seen since Aug. 16. Two flocks of Cowbirds passed at 4:30. A Phoebe perched on the back of a bench. Call-note of White-throated Sparrow. A Snowbird in a spruce tree.

SEPTEMBER 30, 1912.

9 to 9:45 a. m.—Few notes of Song Sparrow. A Phoebe in a young walnut tree. In same kind of trees nearby saw the first two Myrtle Warblers, which were driven away by the Phoebe. A little farther on I met many of these warblers. Last autumn the Myrtle Warbler arrived Oct. 11.

3:30 to 4:30.—A flock of Goldfinches in an osage hedge. A Red-winged Blackbird flew overhead—first seen since Aug. 12. Call of Song Sparrow—saw the bird in some brush.

A Correction.

There seems to be a rather general tendency on the part of very recent phytographers to decapitalize proper names of persons used as specific terminations of plant names. Presumably this error arose from a misinterpretation of §4, Art. 26, Rec. X. of the Vienna Code. The rule says that "specific names begin with a small letter except those that are taken from names of persons (substantives or adjectives).

Formerly it was the custom though an unwarranted one,

of writing the name, *Sanguinaria Canadensis*. The last word should be written with a small letter, i. e., *Sanguinaria canadensis*. Proper adjectives at least of places are not capitallized in Latin. Why the rule should have been interpreted thus for specific names of persons does not seem clear. As the breaches of rule seem to be made by botanists not apparently in sympathy with the Vienna Code and its demands in general, it would appear that occasion is made to show this want of sympathy in the case in question. We are expected to write the names *Lisimachia Hemsleyi*, *Asplenium Andresii*, *Cenchrus Palmeri* not because the Vienna Code or any other botanical code demands it, but for the same reason that we are supposed in English to write the man's name John Smith with capitals. It is required by the dictates of correct grammar. Even the older botanists, well versed in Latin as they usually were, have always written adjective local names decapitalized, and likewise have written personal names as nouns in the genitive with capital letters. Of course it is possible through the blundering example of some to carry the abuse to the contrary so far that it may come to be a custom in America or even elsewhere, but it will, by competent or educated people at least, be relegated to the same class of customs as that of using a singular verb in connection with a plural subject. In fact misuse of principles that ought to be familiar to every high school student of Latin can scarcely result in much credit to our modern phytography.

Obituary.

THE TWO HOWELLS, BOTANISTS.—In the death of Thomas Howell, which occurred at Portland, Oregon, on the third of December, 1912, there passed from this life one of the most remarkable men who has had part in the making of West North American botany. Mr. Howell was born in Missouri, 9 Oct., 1842, and was therefore only some weeks past seventy years of age. It was as a boy of eight years that he entered the country of the Far Northwest in 1850; his parents, with their several children, having traversed the wide wilderness between Missouri and Oregon, by ox team at that early period.

Well though the name of Howell is known in botany, I have no information as to just when, or under what influence his at-

tention was drawn to the study of plants, and the collecting of specimens; but from about 1880 forward he, and for a time his brother Joseph made extensive collections in many parts of Oregon, their labors being rewarded by the discovery of many new species. These rich accessions to the Northwestern flora were published by Engelmann, by Gray, by Watson, and many of the later by myself; though still later a great number were presented in Mr. Howell's monumental Flora by himself.

That which is most peculiar and noteworthy about Mr. Howell's career is, that he accomplished the greatest amount of meritorious and valuable scientific work that was ever done by any man of any epoch, on so very rudimentary an education in letters. I am informed by Mr. Howell's and my own very valued friend, Mr. M. W. Gorman of Portland, that this man's educational opportunities were limited to six months attendance at log school house on Sauvier's Island in his boyhood as a pioneer. The correspondents of Mr. Howell all must have noted that his handwriting always was like that of some child of four or five years, first learning to form letters and connecting them into words; nevertheless, as to spelling, and grammar in general, the lapses were rather few.

Respecting Mr. Howell's abilities as a botanist I had always a very high opinion, but the indications of these, as well as the fuller account of his career, must await further study.

Mr. Joseph Howell, a brother of Thomas, and his senior by something like a dozen years, had been claimed by death only a few weeks earlier. He died, so Mr. Gorman informs me, at Sauvier's Island, 7 October, in his eighty-third year. The interest of both had at first been engaged in botanical exploration and research; but the elder of the two, having a family to provide for, soon withdrew from that pleasant scientific avocation which took up much time, and brought no emolument; and this one, at his recent death left his family in comfortable circumstances; but not so the other, who had given the best of his life to botany, and then died penniless.

Most readers of the work of Thomas Howell naturally attribute to him all the species bearing the Howell name; but this will not be quite correct; and I gladly present here Mr. Gorman's manuscript list of plants the discovery of which was due to the labors of the elder brother, Joseph Howell.

- Isoetes Howellii*, Engelm. June, 1885.
Triteleia Howellii (Wats.) June, 1878.
Montia Howellii Wats. April, 1881.
Saxifraga Howellii, Greene, April, 1891.
Astragalus conjunctus, Wats. May, 1880.
Astragalus Hoodianus, Howell. June, 1883.
Epilobium Hammondi, Howell. Aug. 1888.
Velaea glauca, C. & R. April, 1889.
Coelopleurum longipes, C. & R. 1891.
Gentiana Orfordii, Howell, Oct. 1892. (Edward L. Greene.)
-

Michigan Bird Life.

Professor Walter Bradford Barrows has placed every student of birds in our country under lasting obligations for his very complete work entitled "Michigan Bird Life." With the painstaking care that only a true lover of birds can show, he has written biographies of our birds that are very satisfactory to the observer of bird life. His own extensive observations and a very wide reading of books on ornithology, with a pleasing style, have made an excellent reference book on this branch of natural history.

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Devoted to Natural History, Primarily
that of the Prairie States

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

CONTENTS

A Question of Nomenclature.—(Plate I)	<i>S. W. Geiser</i>	33
Notes on Our Local Plants.—III	<i>J. A. Nieuwland</i>	41
Song Season of Our Birds in 1912	<i>Brother Alphonsus, C. S. C.</i>	48
Our Birds in the Spring of 1912	<i>Brother Alphonsus, C. S. C.</i>	50
Some Midland Dogbanes	<i>J. A. Nieuwland</i>	53
Evactoma	<i>J. A. Nieuwland</i>	57
Nesting Habits of Our Birds	<i>Brother Alphonsus, C. S. C.</i>	60

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VOL. III.

MARCH, 1913.

NO. 2.

A Question of Nomenclature.

(With one Plate.)

BY S. W. GEISER.

An unique point of nomenclature may be found in an inaugural thesis presented by Laurent M. Philipsson, at Lund, in Sweden, in 1788. The thesis engages itself in the description of a number of new genera and species of mollusca. Because, chiefly, of a university usage of the day, by which the authorship of all theses defended was referred to the professor under whom the work was done, much confusion has arisen in regard to the one who is to be considered responsible, nomenclatorially, for the new zoological names; and by some authors they are referred to Retzius, the master, while others hold Philipsson, the respondent, as the author. A year ago, Dr. C. W. Stiles pointed out the unique nature of the questions involved in determining the authorship of the thesis, and urged me to furnish a brief of the case, with references, to the International Commission of Zoological Nomenclature for an opinion. The following is presented as the evidence as to whom we should consider the authority, according to the International Zoological Code, for the new names contained in the thesis noted.

Briefly, as may be seen from the facsimile title page herewith presented, the thesis is a natural-history dissertation, on new genera of shells, which was presented at a public examination, 10 December, 1788, by Laurent M. Philipsson, under the presidency of his master, Professor Regius and Ordinary, A. J. Retzius, M. D., of the University of Lund. It contains iv + 23 small octavo pages. It is dedicated to Baron Frederic von Dalman and to Countess Dalman.¹

¹ *Sacrae Regiae Majestatis* | *Magnae Fidei Viro et Cubiculario* | *Nobilissimo et Generosissimo* | *Domino* | FRIDERICO a DALMAN | *D: no de*

After a number of pages devoted to general observations on the mollusca, we find descriptive notices of the new genera and species. These new genera, with their new and transferred species are given below, together with a citation to the page upon which the original diagnosis may be found. They are as follows:

TRICLA n. g. [=gizzard plates of *Scaphander*]. p. 8.

T. Gioeni, n. s., p. 8.

PLACENTA n. g., p. 15.

P. orbicularis n. s. (= *Anomia placenta* L.), p. 15.

P. quadrangula n. s., p. 16.

P. Ephippium n. s., p. 16.

UNIO n. g., p. 16.

U. Margaritiferus (L.) p. 16.

U. crassus n. s. p. 17.

U. tumidus n. s. p. 17.

U. pictorum (L.) p. 17.

U. ovalis n. s. p. 17.

U. corrugatus (Schröter) p. 18.

CHAENA n. g., p. 19.

C. Mumia (Spengler) p. 19.

C. cuneiformis (Spengler) p. 19.

C. Cymbium (Spengler) p. 20.

PERNA n. g., p. 20.

P. Magellanica (= *Mya Perna* L. = *Magellana major* Argeno.) n. s., p. 20.

P. striatula (L.) p. 21.

P. mediterranea (= *Mytilus bidens* L.) p. 21.

Fledingstorp etc. | Maecinati Gratosissimo | Grata et Submissa Mente | Hanc
Opellam | D. D. D. | Devotissimus cultor | Laur. M. Philipsson.

à | Madame | CHARLOTTE JEANNE | DALMAN, | née Comtesse
de SNOILSKY, | Madame la Comtesse! | Qu'il soit permis très gracieuse
Comtesse de | vous offrir cet ouvrage Academique, qui renferme | la description
d'une partie des plus belles & des | plus precieuses productions de la nature.
Si vous | daignez lui accorder la protection de votre nom | illustre, je serai
d'autant plus au comble de mes | vœux, que j'aurai en meme tems l'honneur
de | vous rendre une marque publique du profond re | spect avec le quel je suis |
MADAME LA COMTESSE |

| votre |
| très humble & très obeissant |
| Serviteur |

| LAURENT M. PHILIPSSON. |

P. viridis (L.) p. 21.

P. marmorata n. s. p. 21.

P. biocularis (L.) p. 22.

P. sulcata n. s. (= *Mytilus exustus* L.) p. 22.

MELINA n. g., p. 22.

M. semiaurita (L.) p. 22.

M. pernæformis n. s. (= *Ostrea Perna* L.) p. 23.

M. Isogonum (L.) p. 23.

M. Ephippium (L.) p. 23.

It will be seen from the foregoing that there are quite a number of names that are by some authors referred to one authority and by others to another. The question is therefore of some importance. Inasmuch as most of my study has been upon the freshwater mussels and, as a consequence, I am more familiar with the literature of the *Unionidae* than with any other molluscan family, and as an important genus of the *Unionidae* is described in the thesis in hand, I will take the part for the whole and deal with the authorship of *Unio*. In order to state properly the problem confronting us, I shall quote from various authors, published and manuscript regarding the authorship of *Unio*:

1. "Genus UNIO Retzius.

"It seems impossible to ascertain with certainty who is the author of this genus. In 1788, Laurentius Münter Philipsson described it in a thesis delivered under the presidency of his master, Retzius, [reference] at the University of Lund, in Sweden, at a public examination for a doctor's degree. Whether Philipsson or Retzius should be credited with the genus can not be positively known, as it is believed by some that the master was the author of the dissertation, which the student merely defended. I am inclined to take this view of the matter, for the reason that Retzius was an author of repute, while it is not known that Philipsson ever gave any attention to natural history or was the author of any genera or species before or since."—Simpson, Charles T., in *The Classification and Geographical Distribution of the Pearly Fresh-water Mussels*. Proc. U. S. Nat. Mus. XVIII: 300 [1896].

2. "This genus was described in a thesis by Laurentius Münter Philipsson under his master Retzius, in the University of Lund, Sweden, and it is often credited to the former. I am informed by Professor Joh. Chr. Moberg, of Lund, that by a former law or custom of the University, the professor was considered the

author of all papers which a student under him defended. According to this, Retzius must be credited with the genus. This law was repealed in Lund in 1852."—Simpson, Charles Torrey, in *Synopsis of the Naiades, or Pearly Fresh-water Mussels*. Proc. U. S. Nat. Mus. XXII.: 679, footnote. [1900].

3. "The real author of the 'Dissert. hist. nat. nova test. genera' was A. J. Retzius, the respondent, Philipsson merely took his degree for undergoing examination on the subject after the custom of those times, especially in Sweden."—B. Woodward, (British Museum) in letter to Librarian. Upper Iowa University, 7 May, 1912.

4. "The genus *Unio* was defined in a thesis written by Retzius the præses and Philipsson got his degree for defending it in public as was the practice of the time. Frequently the thesis would be apportioned out to two or more students and frequently one half of a word will appear at the end of one respondent's part and the rest of it in the next man's and the two separated by the new title page and dedication to parents.

"Occasionally only did a brilliant student write his own thesis and then there usually appears on the title page "auctor respondens"—or some such phrase.

"That this was the custom, you will find set forth in Linnaeus' 'B bl. Bot.' 1736, p. 52.

"There is not the slightest doubt as to Retzius being the author of the thesis in question."—B. Woodward (British Museum), in letter of 10 June, 1912.

5. "As to the authority for *Unio*, it is well established that it is due to Retzius. If his name does not appear as author on the printed thesis, neither does Philipsson's. The paper is merely said to be 'presented' (*defert*) by Philipsson. When a paper was presented by its author, 'auctor' was used. These theses were presented and defended, (and still are) before the examining board of the University without reference to authorship. Philipsson's thesis was not 'published.' It was printed by the Berling Press at Lund, but bears no publisher's name. So, as he claims no authorship, and there is no publisher, and we know from contemporary usage that Retzius did write it, it seems to me to be stretching a technicality to the breaking point to say that we must credit the genus to Philipsson. I shall never do it, and so advised Simpson."—Dr. W. H. Dall, in Letter of 13 Feb., 1912.

Such is a statement of the problem by some of the malacologists of America, and of England. It is indeed one interesting and unique.

To what extent continental and English authors are inclined to credit Retzius with these genera, I can not say. Certain it is that a number of German systematists have referred the genera involved to Philipsson. But one author comes to me now: Dr. Rudolf Hoernes, in his *Paläontologie*, who considers Philipsson as the author of the thesis (cf. genus *Unio*). Most American authors, following in the steps of Mr. Simpson, Dr. Dall, and Dr. Ortmann,¹ refer *Unio* and the other genera described in the thesis to Retzius. But before taking up the discussion of the various points in issue, the provisions of the code governing such usage, may be quoted:

International Zoological Code, Art. 21. "The author of a scientific name is that person who first publishes that name in connection with an indication, a definition or a description, unless it is clear from the contents of the publication that some other person is responsible for said name and its indication, definition or description." And in commenting on this section of the Code, Dr. Stiles remarks in part:

"This point of view lays stress upon holding an author responsible for the names he publishes, rather than upon 'giving him credit' for those names.

"The chief idea we have in citing the author of a name is to aid in tracing it. If now we cited Smith & Kilborne, instead of Wandolleck, as author of *Apiosoma*, or instead of Patton as author of *Piropasma*, we might lead our colleagues to search long in writings of Smith & Kilborne for a name which they perhaps never used even in correspondence."—Stiles, Ch. Wardell, in *The International Code of Zoological Nomenclature as Applied to Medicine*. Hyg. Lab., U. S. Pub. Health & Mar.-Hosp. Serv., Bull. XXIV: 21 [1905.]

Questions to be answered satisfactorily are then: (1) Was the thesis published? What constitutes publication? (2) The purpose of author-citations in zoological names. An interpretation of Art. 21, International Zoological Code. How does it apply in the present case? (3) The validity of a tacit or written law of

¹ Ortmann, A. E. *The Use of the Generic Names Unio, Margaritana, Lymnium and Elliptio, etc.* Nautilus XXV: 89 [De 1911].

a University affecting the authorship of zoological names under the Code. (4) Do we have any internal, specific statement or evidence that Retzius is the author of the thesis? Upon the evidence adduced, we must draw our conclusions.

(1) Dr. Dall in his letter of 13 Feb. 1912, expresses the opinion that the thesis is not "published." He does this upon the basis that no publisher's name appears upon the title page, the ablative phrase alone "Typis Berlingianis" being used. But he clearly involves himself, since, while denying the publication of the thesis thus, in 1788, he would assign the genera to Retzius, of that year. Again, if we were to reject as unpublished, all zoological names contained in theses upon whose title pages the word "published" or its equivalent, in Dr. Dall's opinion, did not appear, we would be obliged to reject names wholesale. If Doctor Dall's contention were valid, then the authorship of these molluscan genera should be referred to the next author who used the names given by Philipsson. The genus *Unio*, for example, if I mistake not, would then be referred to Bruguière, 1792. Even the obsolete provision of the old codes regarding manuscript names recognized and used by authors, and in the *first publication*, recognized and credited to the manuscript author, would not operate. If we can accept as evidence of publication "the act of making known, or offering to the public by sale or gratuitous distribution," clearly this thesis is as truly published as any thesis ever was.

(2.) As Doctor Stiles states, in his remarks on Art. 21, of the Code, previously quoted, while primarily the International Zoological Code aims to give to each author of a scientific combination the fullest justice possible, yet the purpose of the Code in its rules regarding authority for names is chiefly to assist in tracing names generic and specific to their sources in zoological literature.

We have considered that the thesis was published. The next question is, who is the publisher. As will be seen from the title page, the name of the master Retzius appears in the largest type, and hence it has been inferred by some that the authorship of the master is thus intimated. Passing this contention, which is without any objective foundation, we come to the question of the publisher of the thesis. We may well consider, it seems to me, the person who bore the expense of the thesis-publication as the publisher, everything else being equal. And as the code recog-

nizes as the author, the "*one who first publishes the name * * unless it is clear, from the contents of the publication that someone else is responsible for said name,*" we must consider Philipsson the author. For by universal contemporary usage, and by university usage everywhere before and since, the candidate *publishes* the thesis, bearing all expense if the manner of publication is independent, as in the present case. So universal has been this usage in academic circles that we have no reason for questioning Philipsson's *publication* of the thesis. Furthermore, inasmuch as no one else than the respondent and publisher is specifically cited as the author of the thesis, we must consider the defendant and publisher as the nomenclatorial author. In this connection, Mr. B. Woodward, of the British Museum, feels that "Art. 21 of the Internat. Z. Code—or at least the latter part of it seems to refer to such case where one man's description of a genus or species is incorporated in another man's paper and consequently does not apply to the case in point." But it seems to me that the spirit of the Article is plain: that it applies in the present case, and that its operation is not restricted to such cases as Mr. Woodward cites, such as we find, for example, in the case of *Lampsilis fallaciosus* H. M. Smith, 1899.

(3.) In Mr. Simpson's papers, he contends that a local or provincial university law or custom should suspend or supersede the operation of the Code. As quoted before, Mr. Simpson refers to a communication from Professor Moberg, of Lund, in which the latter says that by a former law or custom of the University, the professor was considered the author of all papers defended under him. And then, he, as it seems to us, unwisely, added: "*According to this, Retzius must be credited with the genus.*" This too in the face of the fact that there is nothing *in the thesis itself* to indicate that anyone other than Philipsson should be considered the author. I am informed that such a law with regard to work in chemistry has been in force among German universities up to very recent times. The vital question is whether the existence of such a custom satisfies the provision of the code section: "*unless it is clear from the contents of the publication that some other person is responsible*" for the work presented. To me, it seems that it does not. Unless the credit is given so that a student in a foreign country, unacquainted with local customs and regulations, can understand who is to be held responsible, such provision is not

satisfied. Nor can the at best negative evidence adduced by Mr. Woodward and Mr. Dall be considered as satisfying the provision, for the name "auctor" was not universally used in case the respondent was actually the author of the thesis. What is on the thesis title page or in the thesis itself is the only thing which should determine the systematist's judgment. As Dr. Stiles has said, "I do not see how I could be supposed to know the regulations regarding the theses presented at the foreign Universities, X, Y, Z."

(4.) The argument of probabilities as to authorship is brought forward. Yet it must be remembered that we are not dealing with *possibilities* or *probabilities*—should not, indeed—in the fixing of the responsibility for the names in question. Whether Philipsson did or did not publish any other zoological contributions either before or after 1788 is a matter that does not concern us here. The chief reason for ascribing the genera to Retzius is simply this: the argument of probabilities. This, together with the university usage of Lund, is the sole ground for erroneously referring the genera to Retzius as the nomenclatorial authority.

Despite the recent discussions in German zoological circles relative to the work of the International Commission of Zoological Nomenclature and the Code, the work of the Commission has been most helpful and of far reaching value. It is highly important that we should have an International court of last appeal in things nomenclatorial, in order that we may progress from conflicting codes and a chaos of scientific names to order and uniformity of usage. The International Code, while it may be in some cases apparently unjust in its verdicts, if universally followed, would bring us to the haven of nomenclatorial uniformity, and remove one of the most wearisome and useless tasks of the zoologist, the untangling of the skein of synonyms and homonyms.

Then, clearly, because of the assumed responsibility for the publication of the thesis, Philipsson must be considered the publisher. Since no other person is indicated in the thesis as responsible for its contents, we must consider him the author. Neither the absence of the words "auctor respondens" from the thesis titlepage, nor the tacit law of the University of Lund satisfies the requirements of Art. 21 of the Code. Consequently, again we must consider him the author. The argument of probabilities does

not enter into the consideration of the problem whatever. It is not primarily a question with us whence Philipsson gained his knowledge of these genera, which in the thesis above noted he described as new. That was a matter of interest almost alone to Philipsson. What we are interested in is whence biological science first learned of the genera described. And in answer to our inquiries we find that Philipsson is to be considered as the authority for these molluscan names. The genera, then, and their included species of this thesis, should be cited, *Placenta*, *Chacna*, *Melina*, *Perna*, *Unio*, all of Philipsson, 1788.

The Consolidated Schools
of Brandon, Iowa.
Independence, Iowa.

Notes on Our Local Plants.—III.

BY J. A. NIEUWLAND.

Order 10. LEMNALES.

Family 20. LEMNADEAE S. F. Gray, Nat. Arr.
 Br. Pl. II, p. 729, (1821).

Lenticulaceae Dumortier, Comment. Bot. p. 67 (1823).

Lemnaceae Dumortier Flor. Belg. p. 165, (1827), also An.
 Fam. Pl. p. 61, (1829).

BRUNIERA Franch. in Billotia 25 (1864) *Wolffia* Horkel ex Bartling, Ord. Nat. Pl. p. 76, (1830).¹ *Wolffia* Horkel ex Schleiden, Linnaea, XIII, p. 389, (1839). *Wolffia* Kunth, Enum. Pl. III, 4, (1841), not *Wolffia* Dennst. Schluess. Hort. Malab. 38, (1818), nor *Wolffia* Sprengel, Syst. I, 808, (1825), nor *Wulffia* Necker, Elem. I, 35, (1790).

¹ Since my last notice on the synonymy of these plants, I have found that the first publication of the name *Wolffia* as applied to the Lemnaceous plants was spelled with one f. In this form which has priority over the name spelled with two f's, it is therefore an unequivocal synonym to the pre-existing names also spelled in the same manner with one f. There can then be no excuse for retaining the name in our floras.

Grantia Griff. ex Voigt. Hort. Suburb. Calc. 692, (1845), et Notul. III, p. 223, (1851), not *Grantia* Bois. Diag. Ser. I, VI, p. 79, (1845).

Horkelia Reichenb. ex Bart. Ord. p. 76, (1830), not *Horkelia*, Cham. & Schlecht. in Linnaea, II, p. 26, (1827).

Bruniera columbiana (Karst.) Nwd. Am. Mid. Nat. Vol. II, p. 306, (1912).

Wolffia columbiana Karsten, Bot. Untersuch. I, p. 103, (1865-67).

Grantia columbiana (Karst.) MacM. Metaspermae Minn. p. 134, (1892).

Very common everywhere especially with *Hydrophace minor*. Notre Dame, Lakeville, Chain Lake, Benton Harbor, St. Joseph, Millers, Tamarack. It is never found in pools that dry up completely even part of the season.

Bruniera punctata (Griseb.) Nwd. l. c.

Wolffia punctata Griseb. Fl. Br. W. Ind. p. 51, (1864).

Wolffia brasiliensis Wedd. Am. Sci. Nat. III, 12, p. 170, (1849)

Notre Dame, Ind., rather scarce. South Bend, Pond near Rum Village.

HYDROPHACE Haller, Helv. 3. p. 68, (1768). [Buxbaum, cent. II. t. 37, f. 2.]

Lenticula and *Lenticularia* Micheli Nov. Pl. Gen. p. 15, p. 11, not always that of the other pre-Linnaean older authors.¹ *Lens palustris* and *Lenticula palustris* or *aquatica* of the older botanists; but perhaps a generic specific binary name. LEMNA Dalechamps (1580) Linnaeus Syst. Nat. (1735). Gen. Pl. p. 325, (1737), also p. 417, (1754). Sp. Pl. p. 970, (1753) not *Lemma* or *Lemna* Theophrastus=*Marsilia vulgaris* Linn. *Staurogeton* Reichb. Norm. 33, (1841) in part.

¹ The name *Lenticula palustris* or *Leus palustris* of the pre-Linnaean writers seems to me to be inadmissible because of the similarity to the recognized genus *Lens*. *Lemma* Theophrastus was certainly not *Lemna* Linn., but rather *Marsilia vulgaris*. *Lemna* Linn. is the *φάξος ὁ ἐπὶ τῶν τελευάτων* of Dioscorides. It seems best to disregard *Lenticula* and *Lens* also because the names seem to be generic-specific binary names like *Lilium Convallium*. See. Bubani, P. Flora Pyrenaea 4, p. 22, 23, (1901).

Hydrophace trisulca (Linn.) Bubani, Fl. Pyr. 4, p. 23, (1901).

LEMNA TRISULCA Linn. Sp. Pl. p. 970, (1753), *Lenticula palustris* of the pre-Linnaeans. *Lenticula aquatica trisulca* C. Bauhin, Pin. p. 362, (1623) *Hederula aquatica* Lobelius, Ic. (1579) *Staurogeton trisulcus* Schur. Verh. Siebenb. Ver. Naturw. IV, p. 70, (1853).

Very common on all stagnant ponds and pools that do not dry up part of the season. Notre Dame, Ind. No. 10568, (St. Joseph Co.) also South Bend, Mishawaka, Lakeville, Pine, Warwick near the Michigan State boundary. Springbrook Park, Wharton Lake, Dollar Lake and Chain Lakes. Hudson Lake, (Laporte Co.) Michigan City. Tamarack and Smith (Porter Co.), Millers and Dune Park (Lake Co.), also near Granger (Elkhart Co.), New Buffalo, Michigan, Bertrand, Niles, St. Joseph, Benton Harbor, Baroda, Stephenville, (Berrien Co.), Bankson Lake and surrounding ponds (Cass Co.), Lake Maxinkuckee, (Marshall Co.) H. W. Clarke. I have never been able to find it in bloom.

Frequently when submerged it continues to grow vigorously but fails to produce any roots for generations under these conditions. This condition I have noticed for several years in specimens preserved in the laboratory.

***Hydrophace minor** (Linn.) Bubani, do.

LEMNA MINOR Linn. do *Lenticula aquatica* Brunfels, *Lenticula palustris* Tragus *Lens palustris* Camerarius Epit. 852 also Ray. Angl. 3, p. 129, t. 4, f. 1.

Very common like the preceding. I have found it in bloom at Notre Dame, along the I. I. I. R. R. in May, 1907. No. 10564, but not since then. The flowers appeared from a cleft in the edge of the thalloid shoot and consisted of one or two stamens, when latter of different ages. The anthers were subglobular papillose and pure white in color. The pistil is short styled and almost completely embedded within the cleft and bractlike covering at the base. Flowering specimens were not abundant, only one in about 150 to 200 plants producing flowers. These were, however, perfectly evident to the naked eye because of the whiteness of the stamens. Collecting and separating out the following plants was a very tedious operation.

SPIRODELA Schleiden, *Linnaea*, XIII, p. 391, (1839).

LEMNA Linn. l. c. in part. *Telmatophace* Godr. Fl. Lorr. ed. 1, t. 3, p. 18, also Mey, Fl. Hanov., p. 543, No. 2, also Bubani, Fl. Tyr. IV, p. 24, (1901).

Spirodela polyrhiza (Linn.) Schleiden l. c. p. 392.

Lemna polyrhiza Linn. l. c.

Common in pools. Notre Dame No. 10567, South Bend, near Nutwood, Lakeville, Dollar Lake, Chain Lakes (St. Joseph Co.). Hudson Lake, Sagunay, Laporte, Michigan City, (Laporte Co.). Millers (Lake Co.), Mineral Springs, Tamarack, and Smith St. Joseph, Bertrand, Benton Harbor, Mich. (Berrien Co.); San José Park near Lawton, Mich., (Cass Co.).

Order 11. AROIDEAE.

Jussieu Gen. Pl. p. 23, (1789) also Bartling, Ord. Nat.

Pl. p. 25, (1830). (Under name of Class.)

Arales Britton, Man. Fl. 2nd Ed. p. 5, 229.

Family 21. **ARACEAE** Necker, Act. Acad. Theod.

Palat. 2, p. 462, (1770).

Piperitae Linn. Phil. Bot. p. 27, (1751) in part, also do. (1755).

Callaceae Bartling, l. c. pp. 25 and 67, in part.

• *ARISAEMA* Martius, Flora, 14 p. 459, (1831).

Arum Linn. Syst. (1735) Gen. Pl. p. 277, (1737), p. 431, (1754) Sp. Pl. p. 964, (in part).

Arisaema triphyllum (Linn.) Torrey, Fl. N. Y. 2, p. 239, (1843).

Arum triphyllum Linn. Sp. Pl. p. 965, (1753).

Notre Dame, Ind., Nos. 10566, 3304, 2491, 831. Near St. Mary's Academy along the St. Joseph River, (Dr. F. Powers). I have found it also at Lakeville, Sagunay, Granger, Sweeney's, Nutwood, Mishawaka, South Bend, Woodland, Pine, Terre Coupée, Chain Lakes, in the Kankakee Marsh (St. Joseph Co.), Smith, Tamarack, Warren, Mineral Springs (Porter Co.), Millers, Dune Park, Michigan City, Munich, Mich., St. Joseph, Benton Harbor Niles, Bertrand, Bankson Lake, Grand Beach, Galien, Mich. Also in Elkhart Co. Lake Maxinkuckee, H. W. Clarke.

MURICAUDA Small, Fl. S. E. U. S. p. 227, (1903).

Arisaema Martius l. c. in part.

Arum Linn., l. c. in part.

Muricauda Dracontium (Linn.) Small, l. c.

Arisaema Dracontium (Linn.) Schott. Melet., 1, p. 17, (1832).

Arum Dracontium Linn. Sp. Pl. p. 964, (1753).

Near St. Mary's Academy, both west and east in low grounds. No. 593, U. N. D. Herb., also Nos. 9284, 9323, 2196, 1878, 3192, 592. No. 1997 near the St. Joseph River, Notre Dame, collected by Dr. F. Powers (1889). Also at Munich, Mich., Bertrand, Lawton, St. Joseph. Rum Village south of South Bend, University Farm near Granger, North Liberty, Lake Maxinkuckee, H. W. Clarke.

The seedlings of this plant I have not in early stages been able to distinguish from those of *Arisaema triphyllum*. They begin to germinate from the seeds of the preceeding year about the same time that the older plants appear, and somewhat later than those of *A. triphyllum*. The corm seems to arise from the endosperm part of the seed which persists along time, and so layer after layer sloughs off from as the bottom the true corm appears.

PELTANDRA Rafinesque, Jr. Phys. 89 p. 103, (1819).

Arum Linn. l. c. in part.

Peltandra virginica (Linn.) Kunth, Enum Pl. 3, p. 43, (1841).

Peltandra undulata Raf. l. c. *Arum virginicum* Linn. Sp. Pl. p. 966, (1753).

Common in our marshes. No. 9149 St. Joseph, Mich., also Bertrand, Benton Harbor, San José Park. At the first named locality the plant is extremely abundant south of the city along the Père Marquette R. R. I have never seen so much before at any one place. Chain Lakes, Lakeville, N. Liberty, Michigan City, Tamarack, Smith, also Lake Maxinkuckee. (H. W. Clarke.)

The fruit of our Midland specimens as I have collected them late in fall and quite ripe are green, less than half as large as those of the East, Maryland and the District of Columbia. The seeds of the eastern plants are of a deep purple black to violet color and ripen much earlier. The fruit clusters too of our western plant are but one half as large. The leaves are sometimes narrow, and with small lobes or auricles at the base. It is quite possible that study of fresh material will show our midland plant to be a distinct one.

Family 22. **CALLACEAE** Bartling l. c. in part also
Spach, Hist. Nat. Veg. 12, p. 35, (1846).

Calladea Salisb.

Tribe *Calleae* Spach. do p. 41. Tribe *Arisæareae* Dum. Flor. Belg. p. 162, (1827).

PROVENZALIA F. Petit, Gen. p. 45, (1710), also Adanson Fam. des Plantes, 2, p. 469, (1763).

CALLA Linn. Syst. Pl. (1735), Gen. Pl. p. 276, (1737), p. 414, (1754), Sp. Pl. p. 968, (1753). *Anguina* Trew Commenc. 51. ex Linn. *Arioides* Boerhaave, Ind. Alt. Pl. 2, p. 74, (1727).

Provenzalia palustris Raf., New. Fl. N. Am. I, p. 90, (1836), also Fl. Tell. III, p. 67.

CALLA PALUSTRIS Linn. Sp. Pl. 1. c.

Chain Lakes (St. Joseph Co.), Tamarack (Laporte Co.), Swamp 2 miles E. of Bankson Lake (Cass Co.), Mich.

The plant does not thrive well in these localities and is disappearing. I have been unable to find vigorous or blooming specimens.

Family 23. **ORONTIACEAE** Spach, Hist. Nat. Veg.
Vol. 12, p. 32, (1846) in part.

Orontiacæae R. Brown ex Dum. Fl. Belg. p. 162, (1827) as a tribe.

SPATHYEMA Raf. Med. Rep. II, 5, o. 352, (1808).

Symplocarpus Salisbury. Trans. Hort. Soc. Vol. I., p. 266 (1812.)

Symplocarpus (O. Rich.) Syn. Gen. Am. Pl. p. 17 (1814.) also Nuttall, Gen. 1, p. 105, (1818). *Ictodes* Bigelow, also Med. Bot. 2, p. 41, t. 24, (1818).

Spathyema foetida (Linn.) Raf. l. c.

Dracontium foetidum Linn. Sp. Pl. p. 967, (1753).

Symplocarpus foetidus (Linn.). Salisb.

Ictodes foetidus (Linn.) Bigelow l. c.

Common in swamps, near springs, and small streams. No. 9370 U. N. D. Herb., Notre Dame, near St. Joseph River, Lakeville, North Liberty, Woodland, Mishawaka, Granger, also (Elkhart Co.). Tamarack, Mineral Springs (Porter Co.), also [Deam] Millers,

Dune Park (Lake Co.), Grand Beach, Mich., St. Joseph, Bertrand, Lake Maxinkuckee (H. W. Clarke).

ACORUS Dioscorides¹ also nearly all pre-Linnaean authors, Dodonaeus Pempt. p. 249 or 2, 3, 7, (1583), Marcellus Vergilius, Diosc. p. 10, (1529). Clusius, Hist. Stirp. Com. p. 5, (1546). Lobelius, Obs. p. 30, (1576). Adv. p. 29. *Acorum* Matthioli, Com. Diosc. p. 20, (1554). *Calamus* Auguillara, *Acorum* Dodonaeus Hist. Pl. p. 577, (1557). *Acorum* Caspar Bauhin, Pin. p. 34, (1632), also Lonicer, Camerarius, Tabernaemontanus. *Acorus* Linn. Syst. (1735). Gen. Pl. p. 10, (1737); p. 151, (1754), Sp. Pl. p. 324, (1753). Hort. Cliff. p. 137, (1737).

Acorus verus Morison. Hort. Reg. Bless. p. 5, (1669); Blackwell, Herb. Vol. I, No. 466, (1739).

Acorus palustris Linnaeus Pan Suecus Amoen. 2, p. 245, (1749).

ACORUS CALAMUS Linn. Sp. Pl. l. c. *Acorum legitimum* Clusius Rar, Stirp. Hist. p. 257, (1583); *Calamus odoratus* Hermolaus Barbarus (1530); *Acorum Dioscordis* Camerarius Hort. Med p. 5, (1588); *Acorus undulatus* S. F. Gray Nat. Arr. Br. Pl. 2, p. 159, (1821) ex Stokes Mat. Med. 2, p. 282. *Calamus aromaticus* Petit. Com. (1710).

Smith, Ind. (Laporte Co.), in a small brook, No. 9397. Lowland 2 miles from Nutwood, Ind. (St. Joseph Co.). St. Joseph, Mich. (Berrien Co.); also Stephenville, No. 2725. Sweeney's Crossing on N. J. I & I. R. R. No. 929. (St. Joseph Co.); Lake Maxinkuckee, H. W. Clarke (Marshall Co.).

Dept. of Botany.

Univ. Notre Dame.

(To be Continued.)

Insert after line 2, p. 282, Val. II. AM. MID. NAT.

Order 4. LYCOPODINEAE.

Bartling Ord. Nat. Pl. p. 19, (1830). (Used as a "Class" Name.)

Insert before line 1, p. 281.

Order 2. RHIZOCARPEAE. Bartling do. p. 15.

Insert after line 6, p. 281.

Order 3. EQUISETALES.

Britton, Man. Ed. 2, p. 21, (1895).

¹ *Acoron* Dioscorides. See Daubeny, C. Lectures Roman Husbandry, (1857). App. according to determinations from the Vienna Codex.

Song Season of Our Birds in 1912.

BY BROTHER ALPHONSUS, C. S. C.

Some species are in full song on the day of their arrival. When that date is later than usual, the song season is just so much shorter; for most birds cease singing at the close of the nesting season, which occurs at regular times each spring. The following species begin to sing on the day they arrive: Meadow-lark, Song Sparrow, Vesper Sparrow, Field Sparrow, Towhee, Cowbird, Red-winged Blackbird, Ruby-crowned Kinglet, Yellow Warbler, Warbling Vireo, Yellow-throated Vireo, Red-eyed Vireo, Baltimore Oriole, Orchard Oriole, Rose-breasted Grosbeak, Bobolink, Wood Pewee, Redstart, Maryland Yellowthroat, Purple Martin, Wood Thrush, Cardinal, Fox Sparrow.

Birds whose song usually begins after some days of residence are: Catbird, Brown Thrasher, Scarlet Tanager, Goldfinch, Indigo Bird, House Wren, Hermit Thrush, Mourning Dove and White-throated Sparrow.

The species whose song ends in August or September are those that sing all summer. These are: Robin, Song Sparrow, Vesper Sparrow, Field Sparrow, Cardinal, Towhee, House Wren, Yellow Warbler, Warbling Vireo, Red-eyed Vireo, Indigo Bird, Purple Martin, Goldfinch, Wood Pewee.

The writer was unable to obtain the date of the closing of the song season of the Wood Thrush and the Rose-breasted Grosbeak. This was due to the fact that these species were seen only a few times in spring. On the other hand, the date—July 18—given as the beginning of the song of the Maryland Yellowthroat must be two months later than the usual time the bird arrives and commences to sing. In 1910 the actual date of arrival was May 11.

The bird whose song season was the longest was the Song Sparrow. Other species whose time of singing approached in length to that of the Song Sparrow were: Robin, Cardinal, Vesper Sparrow and Field Sparrow.

Those species whose song lasted but a few days were migrants going farther north and remaining here a very short time. Such were the Purple Finch and the Ruby-crowned Kinglet.

The dates given as the ending of the song season of the birds are the time when they were no longer in full song. No bird ceases to sing all at once. After the date recorded as the ending of the song, there is a period, longer or shorter, during which the bird will sing a few notes, but with less heartiness. Some days the song may be as vigorous as at any time during the song season; but the efforts at singing gradually come to an end, and the woods and fields grow silent.

Even the casual observer will notice the absence of nearly every species at the end of August, with hardly a note to be heard. The closing of the song season of our birds can not but cause a void in the heart of the bird-lover, who has gone out morning after morning to meet his feathered friends, and now—he hears or sees them no more.

NAME OF SPECIES	SONG BEGAN	SONG ENDED
Robin	Mar. 27	Aug. 6
Bluebird	Mar. 25	July 20
Meadowlark	Mar. 19	July 17
Song Sparrow	Mar. 22	Aug. 20
Vesper Sparrow	Apr. 1	Aug. 14
Field Sparrow	Mar. 31	Aug. 20
White-throated Sparrow	May 2	May 15
Fox Sparrow	Apr. 2	Apr. 3
Tree Sparrow	Apr. 3	Apr. 10
Cardinal	Mar. 18	Aug. 5
Towhee	Apr. 2	Aug. 12
Red-winged Blackbird	Apr. 2	July 24
Mourning Dove	Apr. 10	Aug. 1
Hermit Thrush	May 5	May 29
Wood Thrush	May 15	
Cowbird	Apr. 6	July 23
Ruby-crowned Kinglet	May 2	May 4
House Wren	May 8	Aug. 15
Purple Finch	May 2 (1910)	May 5
Yellow Warbler	May 5	Aug. 5
Warbling Vireo	Apr. 30	Sept. 7
Yellow-throated Vireo	May 19	July 29
Red-eyed Vireo	May 19	Aug. 5
Baltimore Oriole	May 2	July 17

Orchard Oriole	May 4	July 12
Rose-breasted Grosbeak	May 14	May 16
Indigo Bird	May 14	Aug. 12
Catbird	May 3	July 21
Brown Thrasher	Apr. 15	June 24
Maryland Yellowthroat	July 18	July 27
Bobolink	May 13	June 19
Purple Martin	June 1	Aug. 18
Scarlet Tanager	May 2	Aug. 1
Redstart	May 3	May 24
Goldfinch	Apr. 21	Aug. 23
Wood Pewee	May 6	Aug. 30

Our Birds in the Spring of 1912.

BY BROTHER APLHONSUS, C. S. C.

The average temperature for the first fourteen days in March was about 28°, and during the rest of the month it was slightly over 40°. To these conditions in the weather is due the small number of migrants that arrived in March. Besides the absence of a number of spring migrants, such winter birds as the White-breasted Nuthatch, Brown Creeper, Hairy Woodpecker, and Chickadee were not once recorded. This observation establishes the fact that these species have a time of migration. The Nuthatch was absent from February 25 until April 10—45 days. The Downy Woodpecker migrated on February 14 and returned on April 6—42 days. The only dates the writer observed the Chickadee were Sept. 8 and Oct. 8, 1911, no record having been made in 1912 until August 1. The Hairy Woodpecker was recorded once—March 2, 1912. The Snowbird is also a winter migrant. The bird disappeared this year on Jan. 29 and reappeared on March 20—an absence of 50 days.

The Hermit Thrush was recorded but twice in April, although the species is usually very common in this month. The Tree Sparrow was seen on the 22 of April, which is late for this species. The cold weather may account for this record, but sometimes a belated individual or two of any species may be seen long after all the others have departed. The solitary record in April of the

Red-headed Woodpecker was remarkable. Fox Sparrows were plentiful this year during the few days they were seen.

The record for May goes only to the 19, for the temperature rose to 81° on that day, and continued at summer heat for the remainder of the month. The presence of an unusually large number of warblers in May gave the writer a splendid opportunity to observe this family. The Magnolia, Tennessee and Myrtle Warblers were seen on 9 days. The Wood Thrush was recorded for the first time in my observations, covering 8 years.

MARCH.

Birds seen on the dates after their names:

Killdeer, 14.	Cardinal, 18.
Purple Grackle, 19, 23, 24, 25, 27, 28, 30, 31.	Meadowlark, 19, 22, 24, 25, 26, 27, 28, 30, 31.
Goldfinch, 21, 31.	Bluebird, 25, 30.
Song Sparrow, 22, 24, 25 to 29, 31.	Chicken Hawk, 26.
Loggerhead Shrike, 31.	Herring Gull, 27.
Crow, 16, 18, 19, 21, 22, 24 to 28, 31.	Field Sparrow, 31.
Snowbird, 20, 21 to 24, 27, 28, 30, 31.	Blue Jay, 16, 18, 19, 21, 22, 23, 26, 27, 28, 30.
	Tree Sparrow, 31.
	Downy Woodpecker, 31.

Total number of species seen, 16.

APRIL.

Birds seen on the dates after their names:

Crow, 1 to 6, 8, 10 to 16, 18, 19, 22 to 25, 27 to 30.	Blue Jay, 1 to 25, 27, 29, 30.
Song Sparrow, 1 to 30.	Meadowlark, 1 to 17, 19 to 30.
Snowbird, 1 to 25, 27 to 30.	Purple Grackle, 1, 2, 3, 5, 6, 8 to 30.
Tree Sparrow, 1 to 4, 6 to 10, 22.	Killdeer, 1, 4, 5, 6, 14, 15, 17.
Robin, 1, 2, 3, 5, 6, 8 to 30.	Cardinal, 2, 3, 6.
Fox Sparrow, 2, 3, 4, 5, 6.	Towhee, 2, 11, 15, 20.
Bluebird, 2, 3, 5, 6, 10, 11, 18, 19, 23, 24, 25, 27, 30.	Field Sparrow, 2, 3, 5, 6, 8 to 17, 19 to 21, 23, 25, 26, 28, 30.
Vesper Sparrow, 1, 3, 4, 6, 7, 8, 10 to 17, 19 to 30.	Red-winged Blackbird, 2, 5, 9, 11, 13, 15, 16, 20, 22 to 25, 27 to 30.
Phoebe, 2, 6.	
Hermit Thrush, 5, 18.	

- Mourning Dove, 3, 10, 14, 15,
19, 20 to 25, 27 to 30.
Golden-crowned Kinglet, 6, 8 to
13, 16, 17, 18, 20, 25.
Kingfisher, 8, 10, 13, 17.
Goldfinch, 10, 21, 25.
Loggerhead Shrike, 10, 11.
Downy Woodpecker, 11, 12, 13,
15, 16.
Chipping Sparrow, 5, 7, 11 to
30.
Brown Thrasher, 15, 16, 19, 20,
22, 23 to 28, 30.
Bobwhite, 21.
Spotted Sandpiper, 22, 23, 26,
28, 29.
Golden-crowned Kinglet, 27.
Cowbird, 6, 8, 9 to 30.
Screech Owl, 7, 18.
Brown Creeper, 6, 8, 10, 12,
15, 23, 25, 29.
Flicker, 10 to 18, 20 to 23, 25,
26, 28, 29, 30.
White-breasted Nuthatch, 10,
12, 13, 23, 27, 28, 30.
Sapsucker, 12 to 15, 17, 18, 22,
23, 26.
Barn Swallow, 13, 15, 21, 24,
29, 30.
Myrtle Warbler, 16, 24, 25, 28,
29.
Red-headed Woodpecker, 26.
Bleak and White Warbler, 29.
Warbling Vireo, 30.
Total number of species seen, 40.

MAY.

Birds seen on the dates after their names:

- Crow, 2, 9, 11, 13, 14, 16, 17.
Bobolink, 13, 14, 15.
Robin, 1 to 19.
Meadowlark, 1 to 8, 10 to 19.
Snowbird, 3.
Towhee, 1, 3, 4, 6.
Vesper Sparrow, 1 to 11, 13 to
19.
Mourning Dove, 1 to 10, 12, 13,
14, 16 to 19.
Cowbird, 1 to 19.
Ruby-crowned Kinglet, 2, 4.
House Wren, 3, 4, 8, 10, 11, 13,
14, 15, 16, 18.
White-throated Sparrow, 2, 3,
4, 5, 6, 7, 10, 15, 16, 17.
Yellow Warbler, 3, 4, 5, 7, 16,
19.
Baltimore Oriole, 2 to 19.
Blue Jay, 1 to 7, 10 to 19.
Bluebird, 5, 26.
Song Sparrow, 1 to 19.
Purple Grackle, 1 to 19.
Killdeer, 1, 5, 15.
Field Sparrow, 2 to 11, 12, 13,
14, 16, 17, 18.
Red-winged Blackbird, 1, 3, 4
to 8, 11, 12, 13, 16, 19.
Hermit Thrush, 3 to 8, 10, 12
to 19.
Kingfisher, 1, 3, 4, 6, 12, 13.
Redstart, 3, 4.
Yellow Palm Warbler, 5, 6, 10,
12, 13, 15, 16, 19.
Chimney Swift, 1 to 8, 10, 14,
15, 16 to 19.
Warbling Vireo, 2 to 7, 10, 11,
13 to 19.

- Rose-breasted Grosbeak, 13 to 16.
 Orchard Oriole, 4 to 7, 8, 10, 11, 13, 14, 18, 19.
 Black-throated Green Warbler, 3, 4, 10, 13, 19.
 Blackburnian Warbler, 3.
 Least Flycatcher, 12, 13.
 Creasted Flycatcher, 6, 19.
 Black and White Warbler, 5, 7, 14.
 Sandpiper, 1, 4 to 19.
 Chipping Sparrow, 1 to 19.
 Brown Thrasher, 1 to 19.
 Downy Woodpecker, 5, 10, 13, 15.
 Goldfinch, 4, 5, 7, 8, 10 to 19.
 Flicker, 1 to 7, 10, 12, 13, 14, 17, 18.
 Tennessee Warbler, 2, 4, 5, 7, 12, 13, 14, 15, 16.
 Yellow-throated Vireo, 19.
 Red-breasted Nuthatch, 4, 16.
 Wood Pewee, 6, 7, 15, 18, 19.
 Cape May Warbler, 5, 15, 16, 18.
 Yellow-throated Warbler, 13, 14, 18, 19.
- Indigo Bird, 14 to 19.
 Catbird, 2 to 19.
 Kingbird, 2 to 11, 13 to 19.
 Black-throated Blue Warbler, 4.
 White-crowned Sparrow, 15.
 Canadian Warbler, 19.
 Scarlet Tanager, 2.
 Wood Thrush, 15, 16.
 Nighthawk, 19.
 Red-headed Woodpecker, 2 to 8, 10 to 19.
 Myrtle Warbler, 3, 5, 6, 7, 8, 13, 16, 17.
 Barn Swallow, 3, 4, 5, 7, 8, 13, 16, 17.
 White-breasted Nuthatch, 7, 13.
 Bay-breasted Warbler, 13, 14, 17.
 Bittern, 1, 12.
 Black-poll Warbler, 3, 4, 10, 18.
 Nashville Warbler, 3.
 Red-eyes Vireo, 19.
 Chestnut-sided Warbler, 5, 13, 14, 17.
 Magnolia Warbler, 5, 10, 13, 14, 15, 16, 17, 18, 19.

Total number of species seen, 66.

Total number of species seen in spring, 77.

Some Midland Dogbanes.

BY J. A. NIEUWLAND.

Apocynum Carolini Nwd., nov. sp.

Planta verisimiliter metralis foliosa glabra, cum caule viridi et ramis multis rubescentibus inforescentiam primam longē excedentibus circa 3.5 dm. Folia suberecta 9–10 cm longa et 2–2.5

cm. lata, in ramis et ramulis minora, lanceolata, vel anguste elliptico-lanceolata, vel etiam oblonga, glabra, viridia superiore facie, pallida vel glaucescentia inferiore. Folia cum venis divaricatis, apice acuminato aristato, (arista saepe 5 mm. longa, vel longior) basi cuneato vel etiam anguste cuneato. Petioli circa 5 mm. longi; internodi 2.5–6 cm. longi. Pedunculi circa 1.5 cm. longi, et pedicelli 2–4 mm. longi cum bracteis scariosis linearibus ad basim ornati. Flores pauci tubulati 3 mm. longi et 1 mm. lati in caulis summitate tantum aggregati. (Quando vero flores in prima inflorescentia vel defloruerunt vel jam lobos fecerunt adhuc submaturos, deinde alii quidam (2 vel 3) cymi in ramis apparent.) Corollae segmenta 1 mm. longa, margine involuti, triangularia, incurvata etiam arescentibus post floribus. Sepala anguste lanceolata vel aristiformia supra mediam partem. Lobi circa 13 cm. long (adhuc quidem immaturi) et verisimiliter perpauci.

Plant probably and apparently a meter high rather leafy, glabrous, with greenish stems and rather numerous long red or reddish branches. Branches and twigs much exceeding the terminal inflorescence (about 3.5 dm.) Leaves of the stem 9–10 cm long and 2–2.5 cm. wide, smaller and suberect on the branches, lanceolate or narrowly elliptic-lanceolate or oblong, green above pale or glaucescent beneath with veins diverging from the midrib. Apex acuminate, plainly aristate, bristle sometimes 5 mm. long or more. Base cuneate or sharply and narrowly so. Petioles about 5 mm. long; internodes 2.5–6 cm. long. Peduncle about 1.5 cm. long at flowering and much longer in fruit. Pedicels 2–4 mm. long arising from a number of scarious bracts at the base. Flowers few (about 12 or 13) tubular 3 mm. long, 1 mm. wide. Inflorescence strictly terminal to the main stem and 2 or 3 others produced only later when the terminal has run to fruit or failed to produce fruit. Corolla segments triangular involute on the margins, scarcely opening, never spreading in the slightest manner, nearly 1 mm. long. Sepals narrowly lanceolate or apparently aristate beyond the upper half.

Pods few, 13 cm. long (in the specimen still immature.)

This plant belongs to the *Cannabinum* group, but is not closely related to *A. cannabinum* itself. The type of the species consists of two sheets, No. 10563 of my herbarium, sent me from somewhere near Detroit, Mich., by Mr. R. Carolin. This enthusiastic collector

of plants of that region was formerly a student in the Botanical Department of the University. The specimens bear his number 880. He had intended sending me further details of this and other interesting plants of that locality forwarded with these specimens referred to, but his sudden, early death intervened. I was unable to obtain any more exact knowledge of date, habitat or location beyond what I have mentioned. The plants were probably collected in the summer of 1912.

The very narrow characteristically pointed aristate leaves, and the tubular whitish rather small flowers serve to distinguish the plant from all others. The habit of flowering with few cymes of different ages is striking. The pods are rather long and often apparently united at their apex bearing the minute remains of the wilted corolla.

***Apocynum tomentellum* Nwd., nov. sp.**

Planta 1 m. alta vel altior foliosa: caulis glabra: ramuli sparse hirtelli. Folia plus minusve erecta, 7-12 cm. longa, 3-6 cm. lata in caule, 3-7 cm. longa, 1-4 cm. lata in ramis et ramulis. Folia ovata, ovalia, elliptica-vel etiam obovata, apice mucronato-cuspidato, obtuso vel rotundato vel aliquando subacuto; basi rotundata vel obtusa vel aliquanda cuneata. Folia in superficie ad marginem et in venis sparse pubescentia, inferiore quidem facie dense tomentulosa pilis albis recurvatis, et praesertim juvenilia dense et molliter tomentella. Petioli dense tomentosa 2-5 mm. longi. Cymi permulti subsessilia vel cum pedunculo usque 1 cm. longo: pedicelli tomentoso-hirtelli. Bractee permultae, lineares, hirtellae. Sepala lineari-lanceolata, hirtella vel tomentulosa, corollae segmenta fere aequantia. Corolla late campanulata cum segmentis divaricatis, rotundatis albentibus 2-3 mm. longa et lata. Lobi bini ex cymis oriuntur, pro planta breves 6.5-11 cm. long, subaequales et ii in ramis et ramulis successive longiores.

Plant 1 meter high or more, very leafy. Stem glabrous, branches and twigs especially sparsely hirtellous. Leaves more or less erect 7-12 cm. long and 3-6 cm. wide on the main stem; 3-7 cm. long and 1-4 cm. wide on branches. Leaves ovate, oval, elliptic or sometimes obovate; apex mucronate cuspidate, obtuse or rounded or sometimes subacute; base rounded or obtuse or even broadly cuneate. Surface of the leaves sparsely pubescent

on veins and near the margin, the lower face densely tomentulose with white somewhat tangled hairs, and when young particularly softly and densely white tomentulose. Petioles rather densely tomentose 2-5 mm. long. Cymes numerous subsessile or with a peduncle of almost the length of one centimeter. Pedicels densely tomentose-hirtellous. Bracts numerous, linear, hirtellous. Sepals linear-lanceolate, hirtellous, or tomentulose almost or equaling the corolla segments. Corolla 2-3 mm. long and wide, broadly campanulate with spreading whitish segments rounded at the apex. Pods arising in pairs successively from stem and branch cymes, rather small 6.5-11 cm. long subequal, those produced later being larger.

I select as type No. 9733 of the Herbarium of the University collected along a branch of the Michigan Central Railroad near the boat house at Notre Dame. The specimen was collected July 8, 1912. As fruit-type I may designate No. 10304 gathered along the road between Cartier Athletic Field and the Ice-house. The plant is very abundant in this locality, but fruiting specimens are never numerous. What will probably prove to be the same species, I have found on the east shore of Upper Chain Lake, about 10 miles west of South Bend, Ind. I noticed and carefully examined this plant several days before I found the flowering type referred to, but failed to collect specimens. I expected to gather such on the return from the north end of the lake and later decided to botanize on the west shore. As I left this part of the country shortly after, and did not return until late in fall, I have had as yet no occasion to obtain specimens from the Chain Lake region.

Apocynum cinereum Nwd. nov. sp.

. Planta foliosa cum foliis perparvis *A. isophylli* quoad formam et magnitudinem, sed dense cinereo-glaucous vel etiam pulverulenta et pallida praecipue in facie inferiore, in superiore quidem pallida vel viridescencia. Internodi breves 2.5-4 cm. longi; rami quoque pallidi qui inflorescentiam superant. Cymi pedunculati; flores multi, 3-4 mm. longi campanulati. Corollae segmenta angustata, apice obtuso vel rotundato, Corolla infra mediam partem fissa. Sepala lineari-lanceolata, vel lanceolata sinum corollae superantia. Flores albescentes vel viridescentes.

Plant leafy with the foliage of *A. isophyllum* Greene, as regards shape and size, but densely cinereous glaucous or even pulverulent,

pallid especially on the lower face: upper face pallid or slightly greenish. Internodes short, 2.5-4 cm. long; branches also whitish glaucous surpassing the first inflorescence. Cymes peduncled: flowers numerous 3-4 mm. long, campanulate. Corolla segments narrow, obtuse or rounded at the apex and cleft below the middle. Sepals linear-lanceolate or lanceolate surpassing the sinus of the corolla lobes. Flowers whitish or greenish.

Although the foliage of this plant as to size and shape resembles that described by Dr. Greene for *A. isophyllum*,* the dense white powdery glaucousness of the leaves is strikingly characteristic as vegetative mark. The flowers are very different, campanulate creamy white to greenish with long corolla lobes, and sepals reaching above their sinuses. The plant is one of the most leafy I have seen in the genus. I designate as type a single specimen No. 9167, gathered by myself in the dune region of Lake Michigan at Millers, Lake Co., Indiana. The plant was collected July 8, 1911, and is in the Herbarium of the University of Notre Dame.

Dept. of Botany.

Notre Dame, Ind.

Evactoma.

BY J. A. NIEUWLAND.

The plant now generally called *Silene stellata* (Linn.) Aiton, has held a rather uncertain place in botany according to the opinions at least of the older phytographers as is evident from the fact of its having been relegated several times from one genus to another and back again. Linnaeus himself had the plant in *Cucubalus*.¹ Aiton transferred it to *Silene*.² Rafinesque³ considered it as sufficiently characteristic to constitute the type of a new genus which he called *Evactoma*.

¹ Linnaeus, C. Species Plantarum p. 414, (1753). also 2nd Ed. p. 592, (1762).

Hort. Ups. p. 110, (1737) "*Cucubalus foliis quaternis*."

² Aiton, f. Hoetus Kewensis, 3: p. 84 (1811).

³ Rafinesque, C. S. Autikon Botanikon, pt. 1, Cent. III., p. 23, (1815-1840). The word evidently according to his own explanation of derivation should be written *Euactoma*; from the Greek εὖ, well τέμνω, ἔτομον, (root τομ-) cut ἄκτις, ray or petal, referring to the deeply cleft petals.

The habit of the plant and certain important characters of the flower, such for example as crownless corolla lend favor to that author's view. The following is Rafinesque's diagnosis:

"*Evactoma* Raf. diff. *Silene* et *Cucubalus* cal. infl. camp. 5 fid. membranosis petalis 5 flabellatis, multifidis non coronatis, stylis 3, caps 3 loc. 3 valvis, fal. verticill. fl. subracem. This deserves to be a G. by habit and characters, the name means well cut star."

Evactoma stellata Raf. Cucub. et Sil do. O. N. America."

Silene stellata (Linn.) Ait, l. c.

Cucubalus stellatus Linn. l. c.

The type of the genus is with scarcely any doubt the glabrous membranous leaved plant of Virginia and farther South. The plant of the west and of farther North generally is scabrous pubescent especially on the inflorescence, stem, and leaves. The petals, are more deeply and unequally cleft and the narrow lobes more numerous. This latter character I have found difficult to determine to my utter satisfaction as the flowers of the herbarium specimens are, when not wanting, in rather poor condition. I have examined the specimens in the U. S. National Herbarium, but live material should be compared to obtain quite satisfactory results. I have therefore deemed it advisable to lay not too much stress on this character for the present and consider the northern and western plant as only a variety of the other. Though the specimens of the latter are more numerous in herbaria, I do not hesitate to designate the southeastern plant as the typical *E. stellata*.¹ Most authors before Linnaeus are silent as to the pubescence of the plant and that author himself does not mention it. John Ray, however, one of the first if not the very first unmistakably to describe the plant designates it as "*Lychnidem Caryophyllum Virginianum gentianae foliis glabris quatuor ex singulis geniculis caulem amplexantibus, flore amplo fimbriato*. Ray, Hist. p. 1895 (1688). From this it is evident that the southern plant was first known in Europe, and found in the botanical gardens there. I need not hesitate then in describing the western and more northern plant as

Evactoma stellata var. *scabrella* var. nov.

Silene stellata var. *scabrella*.

¹ Bot. Mag. p. 1107, vol. 14. P. Miller, Gard. Dict. Ed. 7, (1759) Morison, R. Hist. 2 p. 577. Banister's Catalogue in Ray 2, p. 1927. J. Ray, 3 p. 246. Petiver. Sic. 30. Clay 7 no. 245 etc.

Planta rigidior et ejus partes imprimis folia, caules, et inflorescentia, scabrellae: folia quoque densiora quam in specie: petala multifida segmentis linearibus irregularibus linearibus: folia margine scabro-ciliata.

The plant though as little branched is less slender than the type.

The following are rather typical specimens of *E. stellata* in the U. S. National Herbarium. The plants were examined in the beginning of September, 1912. All the others with a few rather equivocal exceptions were found to be typical of the variety. I indicate the typical species specimens because they are not so numerous. R. Harper's 1101, Chatahoochie River, Ga. VII, 19, 1901. U. S. H. No. 400362. A. A. Heller's N. of Tucquan, Lancaster, Co. Pa. VII, 24, 1901. U. S. H. No. 406955. Apparently the most northern limit. W. Palmer's, Bedford Co. Va. VII, 24, 1906. U. S. H. No. 605061. W. Pollock's Bucklin Upshur Co., W. Va. VIII, 13, 1895. U. S. H. 261684. T. Kearney, Jr., 618. French Broad River. IX, 17, 1897. U. S. H. No. 313305. Albert Ruth's 197, Lookout Mountain, Ga. VII, 1898. U. S. H. No. 345380. E. C. Townsend's, Spring Mtn. Polk Co., N. Carolina, VII, 23, 1897. U. S. H. No. 341735. C. H. Boynton's 37, Highlands, N. C., VIII, 1888, U. S. H. No. 8830. J. K. Small's Summit Iron Mts. Skull Cap. Symth Co., SW. Va. VIII, 11 and 21, 1892 U. S. H. No. 8841. Miss A. Moore's No. 5 Cades Mt. Tennessee, VIII, 1895. U. S. H. No. 250437. C. L. Pollard's and W. Maxon's, De Kalb Co., Ga. Stone Mt. VIII, 12 and 18, 1900. U. S. H. No. 443001. Thaxter's, Cullowhee, N. C. (ex Herb. A. Gray) 1887 U. S. H. 415904.

As types of the new variety I may designate No. 10541 gathered at Notre Dame, No. 3497 collected by W. W. Calkins, at Berwyn, Ill. (his own No. 181) is in bud and flower, another 7333 collected by the same at Hyde Park, Ill. is typical, also No. 3491, by Dr. F. Powers at Notre Dame, and my own fruit specimens No. 2136 are all examples from my herbarium.

Notre Dame, Ind.

Dept. of Botany.

Nesting Habits of Our Birds.

BY BROTHER ALPHONSUS, C. S. C.

ROBIN.

Planesticus migratorius.

The Robin is the earliest of our birds to build its nest. I have seen nests begun in the middle of March when the weather was mild. These early attempts at nesting, however, often prove disastrous, for very cold days are sure to follow, making it impossible for the birds to sit continuously on the eggs. So the nest is abandoned, and another is built later. The Robin has more than one brood, young birds appearing as late as August.

PURPLE GRACKLE.

Quiscalus quiscula.

The Grackle selects evergreen trees for its nesting place. A grove of pines or spruces will always have a number of Grackles nesting there, and they will soon let any intruder know that they are in possession by flying down toward him in a rather threatening manner. The young appear early and make much noise while waiting for food. After the nesting season the Grackles gather in great flocks.

MOURNING DOVE.

Zenaidura macroura.

The nest of the Dove is found usually in evergreens, and is built so very poorly of a few sticks that one would wonder how the eggs fail to fall to the ground. June is the month that the Dove chooses for nesting, but the young may not be fledged until July. I have found young Doves much earlier, however, a fact that shows the nesting season of the species is sometimes earlier, or that there is more than one brood.

COWBIRD.

Molothrus ater.

The Cowbird is our only bird that never builds a nest of its own. The eggs are stealthily deposited into the nests of other species, which have the additional care of rearing a lusty young Cowbird. Frequently such species as the Chipping Sparrow and the Song Sparrow are imposed upon in this manner, and the

larger Cowbird gets the greater share of the food. Sometimes the nest become so crowded that the stronger Cowbird will rest on the edge of the nest.

RED-WINGED BLACKBIRD.

Agelaius phoeniceus.

The Red-wing is a bird of the swamps, where it builds its nest, which is built either on the ground or suspended from the rushes. The young are fledged late in June, there being but one brood. During the nesting season, the old birds manifest much concern whenever a pedestrian passes the place where the nest is situated. The males will follow the intruder, scolding all the while, until he has got away from the vicinity of the nest.

MEADOWLARK.

Sturnella magna.

This well-known species of the meadows places its nest on the ground in some grassy field. About haying-time the young birds are fledged, but sometimes they are still in the nests when the mowing-machine is working. Then there is great excitement among the Meadowlarks, and individuals may be seen flying hither and thither, and showing great alarm by their incessant calling.

YELLOW-BILLED CUCKOO.

Coccyzus americanus.

The Cuckoo builds its nest sometimes in the top of tall forest trees and again in such a low position as may be found in a young box-elder. A habit peculiar to the bird is laying one egg at a time and hatching it before laying another. To this characteristic is due the fact that young Cuckoos may be seen as late as the end of September. I was astonished one day to see an old Yellowbill feeding a young bird on the 30th of September.

RED-HEADED WOODPECKER.

Melanerpes erythrocephalus.

Holes in trees or telephone poles are made by the Red-headed Woodpecker as its nesting-place. Walking along a country road, one may find nearly every pole bored by the Red-heads. In this respect they are an injurious species, for the poles used for nesting are often easily broken by wind and weather. While feeding the young, the old birds make continuous trips to and from the nest.

When the young have left the nest, or even before, the old birds are much given to scolding when any person passes by the location of the birds.

WOOD PEWEE.

Myiochanes virens.

The nest of the Pewee is placed on a branch of some forest tree, and is made largely of moss. The old birds may be seen feeding their young in June. Frequently, a Pewee will sit on a low branch and fly out from it repeatedly for passing insects. Occasionally one of the birds will fly very near an observer, wholly intent on catching an insect.

BALTIMORE ORIOLE.

Icterus galbula.

The nest of the Baltimore Oriole is the most ingeniously constructed of all our birds' nests. Made of string, strips of bark and grasses, and hung from the slender branches of such trees as the maple, elm and willow, the nest is a thing that commands the admiration of every observer. Soon after the arrival of the species, early in May, the building of the nest is begun. The eggs are as beautiful, and similarly marked, as those of the Orchard Oriole. About the middle of June, the first piping notes of the young Baltimores may be heard in many places, for fortunately this beautiful bird is numerous. Within a week of the beginning of piping note, the young will essay an attempt to leave the nest. Some may succeed, while others will get as far as the edge of the nest, make sundry efforts to fly, and then return again to the nest. The last of the young Baltimores are not fledged until nearly the middle of July.

I once saw a Baltimore's nest built in a weeping willow, just over a cement walk. The branches to which the nest had been hung were very slender and swayed greatly whenever the wind was strong. To obviate this obstacle to the safety of the eggs, the birds attached a piece of string to the nest and tied the other end to a branch of a neighboring tree. This feat, which was considered very remarkable to every passer-by, seemed almost a human act.

(To be continued.)

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that of the Prairie States

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

CONTENTS

Midland Witch Hazels	<i>J. A. Nieuwland</i>	61
Nesting Habits of Our Birds	<i>Brother Alphonsus, C. S. C.</i>	65
The Generic Name of the White Pine	<i>J. A. Nieuwland</i>	68
Our Birds in the Summer of 1912	<i>Brother Alphonsus, C. S. C.</i>	70
Seedless Oranges, A Historical Note		76

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Midland Witch Hazels.

BY J. A. NIEUWLAND.

Rafinesque had described various species of Witch Hazels as segregates from *Hamamelis virginiana* Linn., but none of these are now accepted by American botanists at large, as having sufficiently distinctive or constant characters to warrant recognition. All or nearly all were described from the southern or southeastern United States, and concerning their validity we need not concern ourselves here, as none are to be looked for within the region embraced by this article. Their descriptive diagnosis has been made sufficiently plain and Rafinesque's original article may be consulted by such as wish to study them critically.¹ Walter² published several species and Pursh³ one, which all met the same fate as those of Rafinesque. Pursh even advanced the opinion that the northern common Witch Hazel was specifically different from the southern one. The only other species admitted by botanists generally beside *H. virginiana* Linn. are the oriental *H. japonica* Sieb. & Zucc.,⁴ also *H. verna* Sarg. which blooms in spring.

The type of the genus came from Virginia whence Mitchell⁵ first indicated the plant as typical of a new genus, though it had been known long before. He pointed out in criticism of the *Genera Plantarum* of Linnaeus of 1737, that a number of generic types

1 Rafinesque, C. S. *New Fl. Am.* III, pp. 16 and 17, (1836).

2 Walter, T., *Fl. Car.* p. 255. (1788).

3 Pursh, F. *Fl. Am.* Sept. I, p. 116 (1814).

4 Siebold, P., and Zuccarini, J. *Abh. Akad. Muench.* IV, II, p. 193, (1843).

5 Mitchell, J., *Act. Ac. Leop. Carol.* VIII, pp. 187, 224, also Mitchel. J. *Dissert. brevis de Prin. Bot. App.* Norimb. 1769.

had been omitted from that work. Among these was his genus *Trilopus* called by Linnaeus *Hamamelis*, the latter name having been used by older botanists, and even the ancients for a vacciniaceous, or pomaceous plant. Linnaeus had in other cases caused confusion by assuming old classical names for newly discovered genera, as for example in case of *Itea*, *Ptelea*, *Dodocatheon*, etc.

Linnaeus was quite aware of Mitchell's work by correspondence, but before the latter had succeeded in having this article printed, Linnaeus⁶ had himself taken up most of these genera giving them names of his own. Moreover, there seemed to have been a questionable motive in "setting back" the date of some of his publications, apparently to make it appear that he had not gotten his information from Mitchell, so that the actual date of the Act. Ups. from title at least was not "1741" but 1746. Mitchell himself dated his observations "Dabam ex aedibus meis Virginiae 11, 3, 1741," so that the reprint of 1769 seems a further protest against the apparently unjust procedure of Linnaeus. The relative priority of all the names in question is discussed individually by Kuntze.⁷ *Hamamelis* was then first published in Linnaeus' *Genera Plantarum* where it was attributed to Gronovius' *Flora Virginica*. The name however, is not to be found in the latter work part I, and part II appeared only in 1743. The following is the synonymy:

HAMAMELIS Linn. Gen. Pl. Ed. 2, p. 54, (1742).

Trilopus Mitchell Ac. Acad. Leop. Carol. VIII, app. 211, (1748), also (1769), l. c.

Hamamelis Linn. Gen. P. Ed. 5 p. 59, (1754). Sp. Pl. p. 124, (1753).

HAMAMELIS VIRGINIANA Linn. Sp. Pl. p. 124, (1753).

Hamamelis corylifolia Moench, Meth. p. 274, (1794).

Hamamelis virginica Linn., Syst. Ed. XII, p. 129, (1767).

Trilopus virginicus Raf., New Fl. Am. III, p. 15.

Trilopus riparius Raf. l. c.

Hamamelis riparia Raf. l. c.

Tr. or *H. hyemalis* Raf. l. c.

Rafinesque having attempted to make segregates extensively

6 Linnaeus, C. Act. Ups. "Annum 1741" (1746).

7 Kuntze, O., Revisio Generum Plantarum pt. II, p. 519, (1891).

from the species, has perhaps described what may be considered as the type in perhaps the most characteristic manner of any botanist, short though his diagnosis may be. We may quote the description in full: "510. Tr. or H. Virginica Raf. med. fl. tab. 45. Leaves ovate and obovate obtuse repand, base obliquely cordate, smooth; flowers sessile clustered by 3 to 5, calyx and fruit pubescent—the name of *Tr.* or *H. riparia* or *hyemalis*, would have been better, since it only grows on the margins of the streams from New England to Carolina. It is in bloom in December and January, even when the snow is on the ground, and the fruit is ripe in the spring. Branches punctate." In the Medical Flora he says that the fruit takes a year to mature. We have usually found ripe fruit with flowers. We should say that the leaves are membranous or at least thin, though Rafinesque seems to infer that they are coriaceous. He continues⁸ in reference to the change of name already discussed: "This is a very singular genus, formed by Linnaeus with the *Trilopus* of Mitchell, which name he ought not to have changed for the actual, which is the Greek name of the *Mespilus* or *Medlar tree*."

Hamamelis virginiana var. **angustifolia** nov. var.

Frutex circa 2 m. altus sero in autumnno florescens foliis adhuc praesentibus. Ramuli fusco vel atro-fuscatore colore: folia glabra, grosse dentata, vel undulata, tenuia, venosa, apice acuto vel plerumque etiam acuminata, basi inaequali, cordata saltem in altero latere. Folia in ramulis sterilibus generatim ovata vel ovato-lanceolata; lamina 6–12 cm. longa, 3–6 cm. lata aliquando sparse pilis brevibus albis inferiore facie pubescens. Petala 4 circa 1.5 cm. longa et minus quam .5 mm. lata. Flores sessiles 3–4 in ramulorum summitate aggregati. Bractee et sepala dense tomentulosa. Sepala viridia. Fructum non inveni.

This plant is easily recognized by its very narrow leaves compared with the type. The petals are lemon yellow, long and very narrow about one half as narrow usually as those of *H. virginiana*. The shrub shows less tendency to branch, the twigs are long and wiry, the petioles slender and comparatively long (1.5–2 cm.). The leaves are scarcely as thin as in the type, and present on blooming branches whereas in the species they have invariably

8 Rafinesque, C. S. Med. Flora. Vol. I. p. 228, (1828).

fallen off. I select as type No. 10431 of my herbarium, found myself Oct. 17, 1912, one mile north of Hudson Lake (Laporte Co.), Ind., a short distance in a Tamarack-White Pine bog. The swamp formerly contained an abundance of *Pinus Strobus* Linn., which has since disappeared almost completely by the woodman's ax. Though the plant possesses a number of good characters that led me at first glance in its native habitat to recognize it as very different from the other Witch Hazels of our region, I refrain from publishing it as a species not having studied it in all its seasonal changes, nor having found any trace whatever of fruit.

Hamamelis virginiana var. *orbiculata* var. nov.

Frutex cum ramis atro-cinereis glabris nisi in summitate et ibi tomentulosis. Folia orbiculata, firma, vel subcoriacea, parva, 1.5-5 cm. longa, (saepe latiora quam longa, maxima nunquam longiora quam 5 cm.) apice obtuso vel rotundato, basi cordata plus minusve inaequali; margine dentato vel eroso-undulato vel crenato; folia subtus dense tomentulosa ferrugineis pilis, vel glabra, in superficie aliquando pubescentia, Petioli 1 cm. haud excedentes, crassi, tomentulosi.

This plant differs from the preceding in shape and texture of the leaves very strikingly. The habit of the plant with its smooth gray branches and short internodes and numerous flowers is noticeable at first glance. The buds are pubescent and the outer bracts short, giving them the appearance of a minute acorn. The shape of the leaves is very constant and notable, the apex scarcely larger than a marginal tooth and often undefined. The teeth are small. The plant called *H. rotundifolia* Raf. or *H. macrophylla* of the south could not be mistaken for it owing to the larger leaves of the southern plant, whether the latter be recognized ever as either species or variety. The leaves of the southern plant are described as 3-4 inches long.

The type of *H. virginiana* var. *orbiculata* was found in the dune region of Lake Michigan at Tamarack about 7 or 8 miles west of Michigan City, Ind., on Sept. 22, 1910, and is No. 719 of my herbarium. The flowers were not as yet in bloom and the plant perhaps deserves specific rank owing to its striking vegetative characters alone.

Dept. of Botany,
Univ. of Notre Dame.

Nesting Habits of Our Birds.

BY BROTHER ALPHONSUS, C. S. C.

SONG SPARROW.

Melospiza cinerea melodia.

This bird is sometimes called the Ground Sparrow, from its habit of building its nest on the ground. Sometimes the bird will place its nest in a bunch of lilies, without resting it on the ground. The eggs are whitish with brown spots. This species has two broods, the second being fledged about the middle of July. A Song Sparrow's nest is easily approached. The parting of the tall grass near the nest will not frighten the old bird.

FLICKER.

Colaptes auratus.

This interesting bird is sometimes called the High-hole, from its habit of building its nest in a hole high up in a tree. The adjective *high*, however, is frequently inapplicable, for the bird often selects holes that are low down. A very curious instance of the Flicker's variation in choosing its nesting-place came under my observation. The walls of a large ice-house were bored in many places and the birds entered and built in the ice-house.

CRESTED FLYCATCHER.

Myiarchus crinitus.

This handsome flycatcher builds its nest in large holes in trees. The only nests I have ever found were in apple trees. The young are fledged about the middle of July; and while in the nest, the old birds may be seen perched on a branch near by, waiting for a passing insect. When one appears the bird will dart after it; and if successful in catching it, the bird will take the insect to feed it to the young birds.

ORCHARD ORIOLE.

Icterus spurius.

The Orchard Oriole's nest is very finely made of grasses, and is usually hid away in the foliage of maples, elms or ash trees. Often the only way to locate a nest is to watch the old birds carrying food to their young. Even then there is little likelihood that

the observer may see anything more than the exterior of the nest, for it is generally attached to the slender outer branches of the trees. I once found a nest in a young ash, and saw the eggs, which were white and marked irregularly with black streaks.

CHIPPING SPARROW.

Spizella socialis

The chipping Sparrow is sometimes called the Hair Bird, from its habit of lining its nest with horse hair. The nest is always placed in shrubs or low evergreens, and so may be easily observed. I have found many abandoned nests containing two or three blue eggs, and have wondered what caused the birds to leave these nests. One of the sweetest sights in bird-life is four little "Chippies" in the nest, sitting two behind two, and all facing in the same direction. Put your finger near them and four little mouths will open for food.

FIELD SPARROW.

Spizella pusilla.

The Field Sparrow builds its nest of a bunch of grass lying on the ground, which is oval in shape with a large opening at one end. The young may be seen, soon after being hatched, only featherless and shapeless forms. A nest may be discovered by watching the actions of the old birds, which well manifest concern on the approach of an observer. Retire a little and wait for the bird to fly with food for its young, and then you will know the location of the nest.

PURPLE MARTIN.

Progne subis.

The Purple Martins choose church towers or boxes made for them as nesting-places. Sometimes wire-netting is put over the open spaces of towers to prevent birds from entering them. When this device to keep the birds out is resorted to, the Martins will leave the vicinity—perhaps for good. Their eggs are pure white, and there are two broods. When the second brood is fledged—towards the end of July—the Martins begin to flock in great numbers.

CATBIRD.

Dumetella carolinensis.

Shrubbery is always chosen by the Catbird as the situation for its nest. Sometimes the same clump of bushes will have a

nesting Catbird year after year. Does the same pair ever return again and again to one place? Who will answer this question? The eggs are somewhat smaller than, and of a similar color to, those of the robin—bluish. The young birds appear in June and are fledged before July. The Catbird is comparatively quiet whenever any one approaches its nest.

BROWN THRASHER.

Toxostoma rufum.

The Thrasher's nest is built as often on the ground as it is in hedges or bushes. The bird may be easily observed while sitting on its speckled eggs, which are large and never more than four in number. The nesting-season is in May and June, the bird being in song until the young are fledged. This species suffers more than any other of our song birds from bird-fanciers, who esteem it as our most gifted singer.

WHITE-BREASTED NUTHATCH.

Sitta carolinensis.

Holes in trees are chosen by the Nuthatch as its nesting-place. May is the month in which the young are fledged. Previous to the appearance of the brood, the old birds are not much in evidence. Unless a nest is located by the observer, he may think they have migrated in order to rear their young; for this species sometimes disappears for many days.

CHICKADEE.

Penthestes atricapillus.

The Chickadee is a bird of the deep woods, seldom visiting smaller woods or groves. A trip to the country in spring would likely afford one the pleasure of finding a nesting Chickadee. When the bird is found, watch it for a while and you will soon discover the nest. Probably a cavity in a rotting fence-post will be used for the purpose. If you can see into this cavity, you will find many eggs or young birds, for the Chickadee always has a large family.

BLUEBIRD.

Sialia sialis.

Few birds are more interesting during the nesting-season than the beautiful Bluebird. Like the House Wren, the Bluebird always builds in a cavity. I once saw a pipe standing end-wise

in some soft marl, and in the pipe I found a nest. Observing the pipe later, I saw some Bluebirds resting on its edge. Unfortunately, the pipe was removed, and the birds had to build elsewhere. There are two broods; the first being fledged in June and the second, in July. After the nesting season the Bluebirds wander about and may be seen very seldom.

HOUSE WREN.

Troglodytes aedon.

The nesting habits of the House Wren are very interesting. Although boxes are made for the bird both in city and country to attract the Wrens, still they are not partial to the pretty bird-houses, but will often select any cavity in fence posts or stumps. Some very curious locations of Wren's nests have been found. An unused vest hung in a room with windows always open was chosen by one individual. Walking in a wood one day, a friend of mine saw a Wren fly out of the skull of a heifer, and on looking closely at the skull, a nest was discovered. There are two broods, the last being fledged late in July.

The Generic Name of the White Pine.

BY J. A. NIEUWLAND.

When discussing the occurrence of the White Pine in our region under the heading, "Notes on Our Local Plants,"¹ we have had some hesitancy in regard to not accepting the plant as a member of a genus separate from *Pinus*. Moreover, we were persuaded the name *Strobus* of Pliny could scarcely have been the same plant, as that typified by *Pinus Strobus* Linn. nor even *Pinus excelsa* Wall. of the Himalayan Mountains, nor in fact, any plant closely related to either of these. It was therefore indicated as doubtful whether the name could in any degree of accuracy be used for a group of plants containing the American White Pine. The tree was accordingly left provisionally in the genus *Pinus*.

There are, however, very good reasons indeed for considering *Pinus Strobus* as separate from the other pines as was shown by

¹ Am. Mid. Nat. Vol. II, p. 283.

Small² in his Flora of the Southeastern United States. The generic name *Strobus* accepted by that author is objectionable not only for the reason shown above, but it is a homonym to *Strobon* Raf.,³ and apparently neuter gender form of a noun of similar appearance, and certainly more like *Strobus* than the *Galearis* he objects to resembles *Galearia*.⁴ Historical priority being the rule followed in the "Notes" this problem did not really concern us, yet it is worth while to point out that even assuming 1753 as the "starting point" for botanical nomenclature, *Strobus* is still inadmissible as a generic name for the White Pines.

We were also aware that *Apinus* Necker⁵ demanded consideration, but a curious confusion presents itself here for which at first we were unwilling to suggest a solution or propose a definite opinion. Necker seems to have proposed the name *Apinus* for the "group" containing *Pinus Cembra* Linn. and *Pinus Pinca* Linn. *Pinus Strobus* Linn. itself is by him actually put under *Larix*⁶ and therefore positively excluded from *Apinus*. Under these circumstances we can scarcely see how *Pinus Strobus* could be put in a genus from which the very author thereof himself deliberately excludes it, whatever there be in description that might perhaps allow it therein. Since therefore *Strobus* is a homonym there seems nothing to do, if the White Pines are a valid genus, but suggest a new name for them, and we propose *Leucopitys*. The word comes from the Greek λευκός, white, and πῖτυς, pine. A description of the generic characters is scarcely necessary after considering those given by Small.⁷ Following is the synonymy of the two most characteristic species.

Leucopitys Nwd. Nom. nov.

Strobus Opiz, Lotos, IV, p. 94 (1854), not *Strobon* Rafinesque. Sylv. Tell. p. 132 (1838).

Not *Apinus* Necker, El. Bot. III, p. 269 (1790).

Pinus Linn., Sp. Pl. p. 1000, (1753); Gen. Pl. p. 293, (1737); p. 434, (1754); Systema Nat. (1735) in part.

Larix Necker El. Bot. III, pp. 268, 270, (1790) in part.

2 Small, J. K. Fl. S. E. U. S. p. 29, (1903).

3 Rafinesque, C. S. Sylva Tellur. p. 132 (1838).

4 See also Am. Mid. Nat. Vol. II. p. 305.

5 Necker, J. El. Bot. Vol. III., pp. 269, 270, (1790).

6 l. c. p. 270.

7 l. c.

Leucopitys Strobis (Linn.) Nwd.

Strobis weymouthiana Opiz. l. c.

Strobis Strobis (Linn.) Small. Fl. S. E. U. S., p. 29, (1903).

Pinus Strobis Linn. Sp. Pl. p. 1001, (1753).

It may be mentioned in this connection that this plant was found in St. Joseph Co., Ind., near Lydick, in a tamarack swamp. Only one specimen was found but this was certainly not a cultivation. The plant is No. 10568 of the U. N. D. Herbarium. It is an immature though healthy one. This reference was overlooked in the "Notes" and is the most easterly locality for the plant we have been able to record for the region.

Leucopitys excelsa (Wall) Nwd.

Pinus excelsa Wall. ex Lamb. Pin. Ed. II., I, p. 40, t. 26.

Strobis excelsa (Wall)?

Dept. of Botany,

Univ. of Notre Dame.

Our Birds in the Summer of 1912.

BY BROTHER ALPHONSUS, C. S. C.

After May 20, certain species, although common summer residents, were seldom seen. The explanation of their scarcity would seem to be that these species are found only in peculiar localities during summer, and the few that were seen after May 20, were straggling migrants. This would not cover of the case of the Killdeer, Cedarbird and Yellow-throated Vireo. The rarity of the Killdeer was doubtless due to the early nesting of this species. The Cedarbird is a wanderer, and so may frequently be absent from a given locality. The scarcity of the Yellow-throated Vireo—only three records of the species having been made during the summer—is inexplicable to the writer.

The absence, after May 20, of the Purple Finch, Dickcissel, Rose-breasted Grosbeak, Maryland Yellowthroat and Cardinal may be accounted for variously. The Purple Finch and Dickcissel were not recorded once during spring or summer. The Rose-breasted Grosbeak was not found on any day in summer. The

Cardinal was heard only twice during summer—early in August. The most unusual case was that of the Maryland Yellow-throat, the first record being made on July 19. These observations show that in some seasons certain species are entirely absent from, or very rare in, a given locality.

The absence in June of the Yellow-throated and Red-eyed Vireos and the Phoebe was likely due to the fact that these species are not partial to parts that are inhabited, as nesting-places. Some years a grove may have a nesting Red-eye, and then a season will occur when no one of the species can be found in the locality. The same is true of the Phoebe, whose nest is often placed under overhanging rocks; and sometimes so slanting is the position selected that the nest will fall and a new one must be built. An experience of this kind will cause the bird to choose a different locality next year.

Only one record was made of the Bluebird in June. If a nest is not found, the observer may fail to see this species during the nesting-season; for the bird does not cover a large territory until the young are fledged. The Towhee, Yellow Warbler, Scarlet Tanager and Loggerhead Shrike nest in localities that are far from towns, and are unlikely to be found by any one who does not visit deep woods and out-lying fields.

This summer the scarcity of the Killdeer was notable—three times in June and seven times in July and once in August were the only records made by the writer. Other years this species was as common as the Sandpiper. The writer's observations of the Bobolink were most meager this summer—only one in June. This month is usually the time when the species is most abundant, but June of 1912 was remarkable for the rarity of the Bobolink.

In July and August, when the song season of certain species ends, it is difficult to find them. Among such birds are the Vesper Sparrow and the Orchard Oriole. Both of these species, late in summer, feed in unfrequented places, making it necessary to travel far if the observer would locate them.

In August a number of species were found but a few times, in the first part of the month. Such were the Bluebird, Meadowlark, Red-winged Blackbird and Cowbird. The absence of these species for many days indicates a summer migration, which may extend into autumn. After August 20, a great scarcity of many

species was noted, which points to the ending of the summer season.

Birds not seen in May after the 19th: Snowbird, Cardinal, Golden-crowned Kinglet, Ruby-crowned Kinglet, Brown Creeper, Screech Owl, Hell Diver, Purple Finch, Rose-breasted Grosbeak, Black-throated Blue Warbler, Maryland, Yellowthroat, Bobolink, Purple Martin, Black-burnian Warbler, Dickcissel, Black and White Warbler, Bobwhite, Sapsucker, Downy Woodpecker, Shrike, Bittern, Tennessee Warbler, Nashville Warbler, Red-breasted Nuthatch, Chestnut-sided Warbler, Cap May Warbler, Wood Thrush, White-crowned Sparrow, Canadian Warbler.

Birds not seen in June: Cardinal, Hell Diver, Rose-breasted Grosbeak, Maryland Yellowthroat, Redstart, Dickcissel, Alder Flycatcher, Whip-poor-will, Yellow-throated Vireo, Red-eyed Vireo, Phoebe.

Birds not seen in July: Cardinal, Rose-breasted Grosbeak, Bobolink, Dickcissel, Shrike.

Birds not seen in August: Maryland Yellowthroat, Alder Flycatcher, Phoebe, Yellow-throated Vireo, Bittern, Tree Swallow, Long-billed Marsh Wren, Hairy Woodpecker.

MAY.

Birds seen on the dates after their names:

Crow, 20, 21, 25, 29, 30.	Cowbird, 20 to 26, 28 to 31.
Blue Jay, 21, 22, 24 to 27, 29.	Kingfisher, 27, 28, 29.
30, 31.	House Wren, 20 to 24, 26 to 31.
Robin, 20 to 31.	Yellow Palm Warbler, 20, 21.
Bluebird, 26.	Chimney Swift, 20 to 31.
Song Sparrow, 20 to 31.	Yellow Warbler, 20, 21, 22, 24,
Meadowlark, 20 to 25, 28 to 31.	25, 26.
Purple Grackle, 20 to 31.	Warbling Vireo, 20 to 31.
Killdeer, 30.	Baltimore Oriole, 20 to 31.
Towhee, 21.	Indigo Bird, 20, 21, 22, 28, 30.
Field Sparrow, 20 to 31.	Catbird, 20 to 31.
Vesper Sparrow, 20 to 31.	Orchard Oriole, 20 to 23, 25, 26,
Red-winged Blackbird, 20, 21,	28 to 31.
24, 28, 29.	Kingbird, 20 to 25, 28 to 31.
Mourning Dove, 20 to 31.	Black-throated Green Warbler,
Hermit Thrush, 20 to 23, 26	20, 28.
to 29.	White-breasted Nuthatch, 20, 25

Redstart, 20, 24.
 Scarlet Tanager, 25, 26.
 Least Flycatcher, 20, 21.
 Alder Flycatcher, 20, 21.
 Crested Flycatcher, 20 to 31.
 Cedarbird, 24, 26.
 Yellow-billed Cuckoo, 27 to 31.
 Nighthawk, 25, 27, 28 to 31.
 Whip-poor-will, 26.
 Red-headed Woodpecker, 20 to 31.
 Spotted Sandpiper, 20 to 23, 25 to 28, 30.
 Myrtle Warbler, 20.

Brown Thrasher, 20 to 23, 25, 26, 28 to 31.
 Chipping Sparrow, 20 to 31.
 Goldfinch, 20 to 22, 24 to 27, 31.
 Flicker, 20, 21, 24, 25, 28, 31.
 Black-poll Warbler, 20, 22, 24, 25.
 Yellow-throated Vireo, 23.
 Red-eyed Vireo, 20 to 31.
 Magnolia Warbler, 20.
 Wood Pewee, 20 to 31.
 Yellow-throated Warbler, 20, 23.
 Bay-breasted Warbler, 22, 23.
 Pine Warbler, 20.
 Phoebe, 30.

Total number of species seen in May, 53.

JUNE.

Birds seen on the dates after their names:

Crow, 5, 7, 8, 11, 12, 13, 16 to 21, 23, 24, 26, 28, 30.
 Blue Jay, 1, 2, 4, 5, 7 to 15, 17 to 21, 23 to 30.
 Robin, 1 to 21, 23 to 30.
 Bluebird, 24.
 Song Sparrow, 1 to 21, 23 to 28, 30.
 Meadowlark, 1, 2, 3, 4, 6, 7, 10 to 14, 16 to 19, 21, 23 to 28, 30.
 Purple Grackle, 1 to 28, 30.
 Killdeer, 15, 21, 30.
 Towhee, 2.
 Field Sparrow, 2, 4 to 9, 11, 12, 14, 16 to 21, 23 to 29.
 Vesper Sparrow, 1, 2, 4 to 19, 21, 23, to 30.
 Red-winged Blackbird, 1, 2, 8, 9, 11, 17, 23, 24, 26, 28, 29, 30.
 Shreech Owl, 16.

Mourning Dove, 2, 3, 4, 5, 8 to 15, 17 to 30.
 Cowbird, 2, 3, 4, 6 to 10, 12 to 15, 17 to 25.
 Kingfisher, 2, 14, 15, 20, 26, 28.
 House Wren, 1 to 6, 8, 9, 11 to 21, 23 to 30.
 Chimney Swift, 1 to 10, 12 to 19, 21 to 30.
 Yellow Warbler, 5.
 Warbling Vireo, 1 to 6, 8 to 30.
 Baltimore Oriole, 1 to 30.
 Indigo Bird, 4, 5, 6, 8, 9, 12, 18 to 24, 26, 27, 28, 30.
 Catbird, 1, 2, 4 to 21, 23 to 30.
 Orchard Oriole, 1 to 12, 14 to 21, 23 to 29.
 Kingbird, 1 to 15, 17 to 19, 21, 23, 24, 26, 27, 29.
 Scarlet Tanager, 23.
 Crested Flycatcher, 5, 6, 9, 18 to 26.

Bobolink, 19.
 Cedarbird, 8, 13, 24.
 Yellow-billed Cuckoo, 1 to 6,
 8, 9, 11, 14, 17, 19, 26, 30.
 Nighthawk, 1, 2, 4, 5, 8, 9.
 Red-headed Woodpecker, 1 to
 6, 8 to 20, 23 to 30.
 Spotted Sandpiper, 2, 3, 4, 7
 to 13, 15, 18, 20, 23 to 26,
 28, 30.
 Brown Thrasher, 2 to 19, 21, 23,
 24, 25, 27.

Barn Swallow, 11, 23, 28, 30.
 Chipping Sparrow, 1, 3, to 30.
 Downy Woodpecker, 11, 19, 28.
 White-breasted Nuthatch, 13,
 16, 18, 21, 23, 24, 26, 27,
 28, 30.
 Loggerhead Shrike, 6.
 Goldfinch, 3, 4, 6 to 9, 14, 15,
 16, 18, 19, 30.
 Flicker, 1, 2, 3, 5, 6, 7, 9, 12, 13,
 16 to 19, 21 to 28, 30.
 Wood Pewee, 1 to 30.

Total number of species seen in June, 42.

JULY.

Birds seen on the dates after their names:

Crow, 1, 3, 5, 6, 8, 9, 15, 17,
 18 to 21, 23 to 31.
 Blue Jay, 1 to 17.
 Robin, 1 to 31.
 Bluebird, 2, 3, 4, 9, 17, 19 to
 22, 25, 27, 30, 31.
 Song Sparrow, 1 to 31.
 Meadowlark, 1 to 6, 8, 9, 10,
 13, 15, 17.
 Purple Grackle, 1 to 17, 19, 27,
 28, 30.
 Killdeer, 8 to 11, 13, 21, 25, 26.
 Towhee, 10, 11, 12, 17, 18, 31.
 Field Sparrow, 1 to 4, 6 to 23,
 25 to 31.
 Vesper Sparrow, 1 to 15, 17 to
 31.
 Red-winged Blackbird, 1 to 14,
 17 to 31.
 Mourning Dove, 1 to 6, 8 to
 17, 20, 21, 23, 24, 25.
 Cowbird, 1 to 6, 8 to 17, 20, 23,
 25, 29, 30.
 Screech Owl, 26.

Scarlet Tanager, 19, 31.
 Alder Flycatcher, 18, 21, 22,
 24, 27, 29.
 Crested Flycatcher, 2, 4, 8, 10,
 12, 13, 16, 30.
 Cedarbird, 1, 2, 3, 7, 10, 12,
 13, 14, 16.
 Yellow-billed Cuckoo, 1, 2, 4,
 5, 6, 8, 9, 12, 13, 14.
 Nighthawk, 8, 9, 15.
 Whip-poor-will, 17, 18, 19.
 Red-headed Woodpecker, 1 to
 12, 14 to 19, 21, 23, 24, 27
 to 31.
 Spotted Sandpiper, 1 to 7, 9,
 11, 19, 23, 30.
 Brown Thrasher, 2, 3, 4, 5, 9,
 10, 15, 16, 27, 30.
 Barn Swallow, 2 to 5, 9, 10, 12
 to 15, 17 to 21, 23, 26, 27,
 28, 30, 31.
 Chipping Sparrow, 1 to 31.
 Downy Woodpecker, 1 to 4, 8,
 12, 17 to 20, 24, 25, 27 to 31.

- Kingfisher, 8, 12, 13, 17 to 22, 24, 27, 28, 30.
 House Wren, 1 to 17, 21, 25 to 28, 30, 31.
 Hell Diver, 19, 30.
 Chimney Swift, 1 to 16, 30.
 Yellow-Warbler, 20 to 23, 28, 30.
 Warbling Vireo, 1 to 14, 16 to 31.
 Baltimore Oriole, 1 to 30.
 Hummingbird, 8, 15, 16, 17, 22.
 Indigo Bird, 1 to 5, 8 to 13, 16, 17, 19 to 22, 24 to 31.
 Catbird, 1 to 10, 12 to 31.
 Orchard Oriole, 1, 2, 3, 5, 8, 10, 12, 20, 30.
 Kingbird, 1 to 5, 8 to 31.
 Maryland Yellowthroat, 18, 25, 27.
 Purple Martin, 1, 4, 11, 18, 19, 22 to 25.
- White-breasted Nuthatch, 1 to 9, 11, 13, 14, 16 to 31.
 Goldfinch, 1 to 5, 6, 8 to 13, 15 to 22, 24 to 31.
 Flicker, 1 to 6, 8 to 31.
 Yellow-throated Vireo, 22, 29.
 Red-eyed Vireo, 19, 22, 27, 29, 30.
 Phoebe, 18 to 27, 29, 30.
 Wood Pewee, 1 to 31.
 Chickadee, 4, 16, 17, 21 to 24, 27, 30.
 Yellowlegs, 17 to 22, 25, 27, 29, 30.
 Bobwhite, 17.
 Hairy Woodpecker, 17, 20.
 Tree Swallow, 18, 19, 21, 22, 25.
 Long-billed Marsh Wren, 18.
 Bittern, 20.
 Loon, 29.
 Red-tailed Hawk, 30.

- Total number of species seen in July, 58.

AUGUST.

Birds seen on the dates after their names:

- Crow, 1, 2, 4, 5, 11, 12, 14, 15, 16, 19.
 Blue Jay, 2, 5 to 20.
 Robin, 1 to 20.
 Bluebird, 1, 2, 5, 11.
 Song Sparrow, 1 to 20.
 Meadowlark, 1.
 Purple Grackle, 1, 2, 4, 6 to 20.
 Killdeer, 1.
 Cardinal, 1, 5.
 Towhee, 1, 3, 12.
 Field Sparrow, 1, 3, to 8, 10 to 14, 20.
- Vesper Sparrow, 1, 2, 4, 5, 7, 11, 14, 16.
 Red-winged Blackbird, 1, 3, 4, 12.
 Mourning Dove, 1, 3, 6 to 17, 20.
 Cowbird, 9, 12, 13, 15.
 Swift, 3, 5 to 10, 12, 13, 14, 18, 19.
 Kingfisher, 3, 5, 7, 9, 13, 14, 16, 20.
 House Wren, 1, 3, 5, 6 to 16.
 Hell Diver, 1.
 Yellow Warbler, 1, 5.

Warbling Vireo, 1 to 10, 12, 20.	Barn Swallow, 1, 2, 3, 5 to 9, 19.
Baltimore Oriole, 1, 6 to 20.	Chipping Sparrow, 1 to 13, 15,
Hummingbird, 13.	16, 17, 19, 20.
Indigo Bird, 1, 2, 4 to 9, 12 to	Downy Woodpecker, 4, 6, 8,
16, 18, 20.	10 to 13, 16, 20.
Catbird, 1, 2, 4, 5, 6, 9, 11 to	White-breasted Nuthatch, 1, 3
14, 17, 18, 20.	to 8, 12, 17, 18, 20.
Orchard Oriole, 15, 19.	Goldfinch, 1 to 6, 8 to 20.
Kingbird, 1, 2, 4, 5, 6, 9, 12,	Flicker, 1, 2, 6, 7, 9 to 18.
13, 18, 19.	Red-eyed Vireo, 1, 3, 5.
Purple Martin, 8, 9, 12, 17, 18.	Wood Pewee, 1 to 20.
Scarlet Tanager, 1.	Chickadee, 1, 4, 14.
Loggerhead Shrike, 11.	Yellowlegs, 1, 3, 4, 9, 13, 17, 20.
Crested Flycatcher, 7, 9, 12.	Bobwhite, 5.
Whip-poor-will, 1.	Red-shouldered Hawk, 1, 13, 14.
Red-headed Woodpecker, 1, 2,	Yellow-billed Cuckoo, 1, 5, 7,
4 to 20.	11, 12, 13, 15.
Spotted Sandpiper, 1, 4.	Black-crowned Night Heron, 1.
Brown Thrasher, 1, 2, 8, 10,	Cedarbird, 15, 16, 17.
11, 12, 15, 16, 17, 19.	

Total number of species seen in August, 50.

Total number of species seen during summer, 72.

Seedless Oranges, A Historical Note.

The first record of seedless oranges I have been able to find is in an old work of Ferrarius,¹ a Jesuit priest, and native of Sienna, Italy. He describes in somewhat peculiar and at times bombastic style the citrus fruits observed in the gardens and green-houses of Italy, as also those he heard of from missionaries and travellers in China, the Philippines and India, where oranges are native. His seedless orange described on p. 381 is a real "navel" orange though the apex of the fruit scarcely shows this. Other "navel" oranges are shown which are not quite seedless. The seedless fruit is described in a paragraph under the heading: "*Aurantium sine semine*" and the fruit is described as having a pleasant flavor.

¹ Ferrarius, J. B. *Hesperides Sive de Malorum Aurcorum Cultura et Usu Romae*, (1644).

Pages 33-62, AM. MID. NAT. published March 3, 1913.

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THE AMERICAN MIDLAND NATURALIST

Devoted to Natural History, Primarily
that of the Prairie States

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

CONTENTS

Certain Violet Names	<i>Edward L. Greene</i>	79
A New Midland Violet and Some Notes on "Cleistogamous" Flowers	<i>J. A. Nieuwland</i>	85
Some Littoral Algae of Puget Sound	<i>Chas. O. Chambers</i>	91
Notes on Our Local Plants.—IV.	<i>J. A. Nieuwland</i>	98
Migration of Our Birds in the Autumn of 1912	<i>Brother Alphonsus, C. S. C.</i>	125
An Older Name for <i>Listera</i>	<i>J. A. Nieuwland</i>	128
New Plants from Various Places.—II.	<i>J. A. Nieuwland</i>	129
Book Note		133
<i>Viola arvensis</i> Murr. in Northern Indiana	<i>J. A. Nieuwland</i>	134

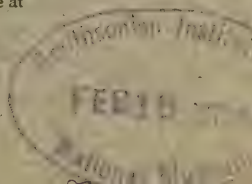
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PLATE II. NIEUWLAND—A NEW MIDLAND VIOLET, ETC.

The American Midland Naturalist

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JULY, 1913.

NO. 4.

Certain Violet Names.

By EDWARD L. GREENE.

The rather copious literature of violets which for several years past has occupied much space in several botanical journals of New York and Boston must have been unsatisfactory and even dull reading to as many botanists—they are very many, and scattered all over the country—who are interested in violets in the field, as nature there presents them; also I doubt that any considerable number of botanists, of whatever degrees of proficiency in knowledge of the plants, have found pages of guesses about hybrid origins, and high sounding theorizings about Mendelian laws, able to hold their very serious attention. By way of variety there is now given us a paper of considerable length on some aspects of the violet question that to the writer of the paper seem to have been too long neglected. Its leading points are nomenclatorial. This paper is from the facile pen of Mr. Eugene Bicknell of New York, and of course is far as possible from being dull, or uninteresting.¹ Nevertheless, the man of the facile pen, if proceeding in the name of science, may well be advised to pause, now and then, look up a page of some old volume—or one not so old—and see that his pen tells always the exact truth; for nothing else has permanent place in any science.

On the matter of *Viola obliqua* the first statement of my friend is that "The name seems first to have emerged into the modern light in the Illustrated Flora." It seems to have been entirely forgotten here, that the name *V. obliqua* had "emerged into the modern light" as early as 1886—ten or eleven years before Mr. Bicknell's date of the "emergence"—in the Botanical Gazette, the man who presented it to the botanical public being

¹ *Viola obliqua* Hill, and other Violets. Bull. Torr. Bot. Club, vol. 40, pp. 261-270. June, 1913.

Asa Gray. Its right of priority was as clearly shown there as it was ten years later in the Illustrated Flora. He did not believe in the enforcement of the law of priority in cases of that kind. The name *V. cucullata*, in his view, had been too long in place in all the nineteenth-century books to be now displaced. Now, first of all men to take up that name *V. obliqua*, after Dr. Gray's intimation, and place it on a printed page heading a paragraph, and as the possibly available name for the most common of Potomac Valley violets—I say first of them am I; yet Mr. Bicknell, apparently through failure to distinguish between two ideas that are nevertheless very distinct, now writes me down as the most successful of all who have assailed the name *V. obliqua*. The principal paragraph of his first page opens thus: "More redoubtably than any other writer, more picturesquely, Dr. Greene has used his slings and arrows against this name." Mr. Bicknell appears as having failed to distinguish between things so dissimilar as the name of a plant and the figure purporting to represent the plant. I should say that the name of a plant is one thing, the verbal description of the plant another thing, and a picture of it a third thing. I have inveighed against the figure of *V. obliqua* given by Hill, but nowhere against the name; and so I suppose that what Mr. Bicknell had in mind would have found happier expression if before writing he had looked again to see whether it was a name or a picture that I had spoken against. I am sure that I nowhere wrote against both. A more curious passage in Mr. Bicknell is this: "His onslaught—surely not to be withstood—finally by a hair's breadth evades a fatal issue. With fine dexterity the all but destroyed thing has been rescued and, on the instant, sent forth with now well established rights—for how shall it ever again be assailed with better success?" Here I seem to observe that the writer has now, right in the midst of his paragraph, a new topic; at least one quite distinct from that which he began. He has now joined together the name and the plant. It seems to be affirmed that I had now, at one place, established well the name *V. obliqua* as connected with a certain type. This is a more inexcusable misconstruction of me than the other, if there is any difference. There has been entirely eliminated from my page, in Mr. Bicknell's thought, that interrogation mark. The first thing I wrote on that page which has elicited so much and such pleasing comment was "V. OBLIQUA,

Hill?" To the understanding of what I have said in the paper cited, nothing is more needful than the remembrance of that small crooked mark. Its meaning with me is very definite, namely, that I am in doubt as to what the living plant really was to which Hill gave that name. That crooked mark being there, and there bearing its usual meaning, I can not reasonably be credited with having "rescued" the name from ambiguity, or with having sent it forth with "well established rights" as the name for any species. My meaning all the way along and to the end was, and is, that to what species *V. obliqua* as a name applies, is to me uncertain. It has not received from me what Mr. Bicknell denominates "reinstatement," except hypothetically, and that is not reinstatement at all. The utmost accomplished by me in that series of paragraphs is, a showing that the name may possibly turn out to belong there, unless as much as this be made out of my concluding words, that it is matter of probability, which is of course coming nearer to positive affirmation than is possibility; though neither amounts to the positive. I wish that my friend in New York, while he was about it, had reproduced my concluding statement in its integrity, and so had saved me the trouble.

"This species is the most common of all East-American violets, preferring heavy but not wet soils, often growing in great abundance in rather low copses or even somewhat dense moist thickets. Its apetalous summer flowers are on very short horizontal peduncles, the growing ovary being concealed under dead foliage or the lighter mould about the base of the plant. I believe that the species has several specific names already; but I am confident that it can never be proven that it is not *V. obliqua*, Hill; and since that is the oldest possible name of it, I here leave it under that designation."²

Now if I well comprehend Mr. Bicknell's interpretation of the last two or three lines, his view is that when I say it can never be proven that a certain species is not *V. obliqua*, Hill, I have in effect neutralized, virtually eliminated my mark of doubt with which I began, so that thenceforward I would have used *V. obliqua*, Hill, simply and plainly for the violet I had in view. Such never was my mind. The doubt expressed at the heading of my paragraphs had not been, nor has it yet been re-

² Pittonia, vol. 3. p. 143 (December, 1896).

moved. In my thought, that designation under which I left it was *V. obliqua*, Hill? This written out would be "*V. obliqua*, Hill, perhaps." At that time, as clearly as now, was I well aware of the universal manual-makers' proclivity for universal dogmatism in nomenclature and elsewhere; the certainty that he, the scientific would-be-infallible, will never admit that he is in doubt, will never consent to a question mark after a binary name, in any of his books of botanic dogmatism. If I had indited—if I had edited and published—a monograph of violets covering this ground, or a manual containing our Potomac Valley violets, I should have written *V. obliqua* and some other names with those honest unassuming question marks; so averse am I to pretense of truth where in reality there is only doubt.

On the second page of Mr. Bicknell's article is much positive, even very forcible and emphatic language in defense of Hill's figure as having had for its original a violet which he, Mr. Bicknell, can with perfect confidence demonstrate. He is more ardent for the defense of said figure than I was strong in my "onslaught" on it as worthless, and inasmuch as appeal is frankly made by Mr. Bicknell to others who, as he says, must judge, it is I think to be regretted that a reproduction of Hill's figure was not then and there given. It is the vision of this much written of figure that will convince—perhaps some one way and some another. I believe it has been that old engraving which has persuaded others more recently, as it aforetime persuaded me, not to identify with it except hypothetically any violet of this country that we know.

I am now ready to offer some conciliation. That opinion as to the worthiness of the old *V. obliqua* figure to be taken as a definite token of one specific type, to which I gave strong negative expression seventeen years ago, and that directly opposite opinion which Mr. Bicknell now puts forward, are not so squarely contradictory as at first reading, and without explanation, they will seem; for I had one species in view, and Mr. Bicknell has another; and the two are very dissimilar. That which I was comparing with that old picture is much farther from any approach to answering the requirements of the old picture than is this which Mr. Bicknell is comparing with it. What I had before me was that afterwards published by Mr. Pollard, and with my knowledge and approval as *V. communis*; which same also I, a very few

years subsequently, and with Mr. Pollard's cordial assent, put forward as *V. papilionacea*, Pursh.³ Now, when Mr. Bicknell informs us that what he is contending for as the real *V. obliqua*, Hill, "is none other than the common violet we have been taught to call *Viola affinis*, Le Conte," I begin to think Mr. Bicknell and I are not at all of two very different opinions as to what plant Hill's miserable figure was meant for. But we can not be found at actual agreement unless we find that each has the same *V. affinis* in view, may be not then; I strongly doubt that either he, or any other man that has been in New York lately except Mr. Pollard has ever seen in its native soil just the plant on which I restored, and as it appears quite effectually, the long unknown or ignored *V. affinis* of Le Conte. What I had before me is a plant locally plentiful in Maryland and Virginia, but the localities are few. It can not, therefore, be called a common violet. For the rest, the common plant of the Hudson River Region, and across to the Connecticut, at least, by my own repeated observation, and which New England people are "taught to call *V. affinis*," is so utterly different habitally, ecologically, and in general specific characters, that I await only time and opportunity to name and publish it as new; for I am sure it is so, and that from my careful field study. It is less like the figure of Hill as to leaf-pattern than is my District of Columbia *V. affinis*. I am not in any position to dispute that my *V. affinis* may reach New Jersey and Long Island, and that Mr. Bicknell may have met with it. But it does not grow far up the Hudson, or the Connecticut, where there abounds, as I have said, a beautiful woodland—rather low-woodland—violet of another nature and character, which all Connecticut "is taught to call *V. affinis*."

I shall now have at once to thank Mr. Bicknell for the information, and humiliate myself in the confession that I think I never knew until now that in Britton's Manual of a dozen years since Mr. Pollard had assigned the name *V. obliqua* to my Le Conte's *V. affinis*. The apologies for my ignorance are several; though I make no apology for the fact that the Manuals and the Illustrated Floras are the books least used by me of all. Seldom is there anything in them for me. But all the botanical world knows that for eight years past the best part of my time and strength have been given to work far different in character from critical taxonomic work. My few weeks of vacation bring me

fine stores of material and notes botanical which lie in their places and wait. One thing, however, I must offer in connection with Mr. Pollard and the *Viola obliqua* matter. It was after I had so denounced the Hill figure of the Hortus Kewensis that there came into my possession that most priceless of American uniques, Le Conte's unpublished plates of violets and bladderworts. In this I saw that that author's representation of his *V. affinis* there was that in its leaf-outline which brought it nearer to that of *V. obliqua*, Hill, than was my own "*V. obliqua*, Hill?", that is, what afterwards became *V. communis*, Pollard. Here, then, was a plant that could with less doubt be identified with *V. obliqua* of the Hortus Kewensis; though still there would be doubt enough about it; at least, so I thought.

I must here interrupt the story of the suppression of *V. affinis*, Le Conte by Mr. Pollard in favor of *V. obliqua*, in order to relate how I came to recognize *V. affinis* myself.

When, at the end of my very first season's recreating in Eastern botany, mostly done in the valleys of the Potomac and Patapsco rivers, I had made those two segregates, "*V. obliqua*, Hill?" and "*V. cucullata*, Aiton?" of the Third Volume of Pittonia, I had already recognized what I conceived to be two ecological conditions of my *V. obliqua*, the less common plant was found only in deeper shades, in moist ground. It had a more elongated and acute, as well as much thinner foliage; also a somewhat different apetalous flowering and fruiting. Most—though not all—of this plant of the long thin foliage was afterwards my *V. affinis*; but I let two more seasons pass, with their opportunities for more research, before I ventured to segregate it finally. I had quite to my satisfaction identified it by Le Conte's description quite anterior to the time when I first saw the unpublished figure referred to; and that only confirmed my earlier determination of it.

Now on the arrival in Washington of the Le Conte botanical art treasure, as my property, I called Mr. Pollard's attention to those longer and more pointed leaves of this plant, as bringing it nearer than any other of our violets to the poor figure of Hill's *V. obliqua*. I recall that Mr. Pollard more than once came back to study that particular plate, and finally to make of me the remarkable request—I do not like to use the less mild term audacious in connection with an old and valued friend—that he

be permitted to make a copy of the plate. Doubtless I might have forgotten the whole circumstance of my friend's very special interest in the fine colored plate under which Le Conte, now ninety years since, had written in pencil "*V. affinis*," but for his surprising request. I now see that Mr. Pollard's purpose was fully formed then, to suppress *V. affinis* in favor of *V. obliqua*; and I repeat, that I never knew he had done so, until now Mr. Bicknell has adverted to the fact in print.

It was never my own thought to displace the name *V. affinis* or any other, and write *V. obliqua* instead. I do not yet know any violet that has the subfalcately cuspidate leaves and perfectly serrate foliage—it is even sharply as well as exactly serrate—of Hill's figure. An artist's error which amounts to an absolute falsification in respect characters held essential should never, in my judgment, be permitted to stand as a specific type; and I strongly suspect that such an opinion as this, conceived by others, had been the reason, and as I think a perfectly valid one, for ignoring the *V. obliqua* as applied by Mr. Pollard in Britton's Manual.

Washington, D. C.

A New Midland Violet and Some Notes on "Cleistogamous" Flowers.

(Two Plates.)

BY J. A. NIEUWLAND.

Viola candidula Nwd. Sp. Nov.

Planta verna circa 13 cm. alta perglabra, foliis florum altitudinem haud aequantibus. Sepala inferiora circa 7 mm. longa vix acuta, etiam obtusa, vel plus minusve rotundata, glaberrima, obscure 3-nervia, margine anguste scarioso vel membranoso. Corolla alba latior quam longior, petalis superioribus latissime obtusis suborbicularibus, 12 mm. longis 10 mm. latis, vel latioribus, lateralibus breviter sed crebre barbatis pilis longioribus (usque 1.7 mm.) fere cylindricis acutiusculis vel obtusiusculis, brevioribus obtusis vel rotundatis, et omnibus eleganter clavellatis praecipue brevioribus (pilis parte inferiore circa 24 μ et ad apicem 57–99 μ

diametro.) (Vide figuram.) Petalum inferius aspectu reliquis subaequilongum, concavum, obtusissimum vel minute retusum, nudum, lineis violaceis supra medium vel apicem versus ramosis eleganter notulatis. (Lineae in petalis lateralibus paucae minus ramosae et in superioribus tantum binae vel ternae simplices.) Bracteolae at medium pedunculi breves lineares subulatae appositae. Calcar breve rotundatum purpureis vel violaceis puncticulis exterius coloratum.

Flores apetali aestivi, subterranei sed se ad superficiem fructu facto erigentes, sepalis 5 verisimiliter subaequalibus acutis, ad apicem involutis, et pistillum cum duobus staminibus appresse includentibus, stylo longo brevi hamato vel incurvato staminibus binis appendiculatis alatis compresso: stigmatibus binis vel quaternis staminum antheris appresso. Aliquando tertium adest parvum et omnino sterile stamen inter altera insitum, vel cum duobus vel tribus minutis tuberculis ad pistilli basim. Folia prima reniformia, viridescencia, crassula, rotunda, cordata, apice obtuso vel rotundato, margine crenato vel obtuse serrato. Folia aestiva majora ad apicem plus elongata circa 6.8 cm. lata et usque 7.5 cm. longa, perglabra, vel cum perpauca minutis pilis in venis ad apicem superficiei.

In locis humidis sed arenosis inter gramina et carices ad stagnorum ripas crescere invenitur.

Spring plant about 13 cm. high perfectly glabrous growing in clumps: leaves never becoming as long as the flowering peduncles until the summer phase, usually about one half as long. Lower sepals about 7 mm. long obtuse or rounded, glabrous, obscurely 3-nerved, the margins narrowly scarious or membranous. Corolla pure white (!) broader than long: the upper petals broadly obtuse or rounded, suborbicular, 12 mm. long, 10 mm. wide or wider, the lateral ovate or obovate, obscurely retuse, bearded with short and long clavate hairs: (the larger hairs 1.7 mm. long about 24 μ wide below, and 57-99 μ near their apex; the shorter ones more obtuse or rounded) (Fig. 4.) Lower petal apparently in flower equal in length to the others, concave or somewhat carinate obtuse or slightly retuse, naked, elegantly striped with cross-branched violet lines to above the middle, the striations on the lateral and upper petals are much fewer, only about 3 in the latter. Bracts short subulate linear on the middle of the peduncle,

Sac or spur short, rounded, marked on the outside with minute purple dots.

Apetalous summer flowers subterranean but in their wet native habitat rise to the surface where an abundance of seeds is formed in the capsules. The petaliferous flowers also produce abundant seed. Sepals 5 equal or subequal acute at apex and slightly involute in aestivation (Fig. 2a.) completely closed and appressed to the pistil. Style short permanently hooked or recurved between the anthers and appendages of the two equal stamens. Anther sacs obovoid 2 to 4 in the latter case the two inner smaller, opening by a subapical cleft. At times a third perfectly sterile stamen about one half as large as normal is found between the two usual ones and several tubercles at the base of the ovary mark the other abortive stamens. No trace of petals.

First leaves dark green, thickish, reniform, later rounded cordate, apex rounded or obtuse, or minutely retuse, margin crenulate as the lobes below and crenulate serrate above, about 2.2 cm. wide 2.5 cm. long.

Summer leaves with a more elongated apex often about 6.8 cm. wide and 7.5 cm. long, glabrous or when grown in dry soil with very few minute short hairs at the apex on the upper face or the veins. Habitat wet sandy places near the grassy and sedgy shore of lakes.

This beautiful little plant was first found by me east of Benton Harbor, Mich. in spring of 1909 along the shore of the river flood-pond. Owing to the markedly white flowers and appearance of the broad corolla, several plants were taken and planted in a bed near the University Dept. of Botany, together with a number of other violets. The plants became notable by their remarkable tendency to spread. In the second season numerous seedlings over the whole large bed came to maturity and in spite of digging and cultivation a considerable number have this spring been segregated more carefully to a plot by themselves. This spring another visit to Benton Harbor showed that the plant was spreading there also, though considerably checked by encroachment of cultivated land. Several clumps were taken home for study of fresh material, and transferred to a special plot in order to follow up the subsequent development of latter summer phases, and to study the apetalous flowers more carefully. Though the flowers are perfectly white they are so very large that one could

not consider the plant of the *V. blanda* group. Moreover, though we at first suspected it to be an albino form of some other blue plant, this idea had to be discarded. The other characters of flower and vegetation disproved this completely. Albino forms of *Viola peramoena* were found growing not very far away along the same pond, but even at that early stage showed no resemblance whatever in floral structure. Their subsequent development in our garden emphasized this difference even more in the vegetation summer phases. Other real albinos and intermediate paler forms found by me in woods near the Four Mile Bridge along the St. Joseph River, north of South Bend, also exhibited in summer phases pubescent large leaved plants not at all like *V. candidula*. As far as I have been able to determine the plant is always white flowered. A clump turned over in the meadow by the plowman showed a tendency in the flower to become faintly purplish (not blue or violet) on the back of the petals, whereas even then, the inside of the corollas were white. The descriptions were made from live plants in their native habit. The drawings of petaliferous stages were made from such a plant a few days after being taken from the field. The study of apetalous stages and flowers was made from the same plants grown both in garden, and a potted plant in moister situation. The results in each case were the same though in the latter case fewer apetalous flowers produced seed and more petaliferous ones, and vice versa in the former instances. The plant in its native habitat seems to produce its apetalous summer flowers above ground: whereas in drier situations these are subterranean only, coming above ground after the ovules begin to develop. I may select as a type of this new plant No. 11111 of my herbarium collected at Benton Harbor, May 1913, from which the drawings of the accompanying plate were made before pressing. I have not as yet found the plant elsewhere.

There seem to be two widely different opinions as to the development of the so called "cleistogamous" or apetalous summer flowers of certain groups of caulescent and acaulescent violets. This phenomenon occurs also in the *Antennarias* apparently, in *Polygala polygama* and a considerable number of other plants. Having studied the matter only in the aforementioned new violet, as also in *Viola rostrata* and a midland member of the *Viola pedatifida* group from Southern Illinois, grown in my violet garden,

I do not wish even to hint at any general conclusions regarding the phenomenon as supposed to occur in violets generally.

It has been asserted on the one hand that the so called cleistogamous or apetalous flowers of violets though they may have rudimentary stamens, are entirely devoid of pollen and that therefore no fertilization whatever takes place, that is, in other words the ovules in these aestival flowers develop parthenogenetically. Others have affirmed that fertilization occurs, therefore presuming that pollen or its equivalent is formed and that close fertilization takes place without the opening of the flowers at all.

Whatever examination has been made of other apetalous flowers we need not discuss here. In examining these flowers of the new plant for diagnosis we found that two anther bearing stamens are always present. The anther sacs are two to four in number, in the latter case the two nearest the pistil larger. None of them are, however, never more than one-fifth as large as the anthers of the petaliferous flowers. The pollen grains though comparatively scanty are more than sufficient to account for the fertilization of the numerous ovules. Pollen need not be as copious as in the petal-bearing spring flowers for the proximity of the two stamens pressed against the stigma obviates waste of pollen which in the closed flower can not be readily lost.

I have found a considerable number of such flowers just in the stages in which the enlarging pistil apparently by friction of growth upwards together with the compression of the sepals on the outside, causes the rupture of these apparently abortive but only more minute anther sacs of the two closely oppressed stamens. The pollen was found in these instances in various stages of germination of pollen tubes, nearly all of which led to the opening in the stigma of the curved or hooked style (See Fig. 3) the progress of the pollen tubes farther in was not made. A more exact histological study would be necessary. Even after tracing the tubes into the ovary, cytological study of the behavior of the chromosomes in the oospores alone would serve as final evidence when fertilization had actually taken place or not. It would seem that the problem would be an interesting and not perhaps a difficult one for general and more exact study.

Developing pollen tubes were found in apetalous flowers which were as a rule not over 4 mm. long and not less than 2.5 mm. In larger flowers the stamens have dried up completely and

as soon as the pollen has escaped the apical membranous appendage of each stamen becomes red. Simultaneously the petiole begins to elongate in the curved portions thus having the two bractlets on the recurved peduncles farther away than the apex of the sepals. A certain variation of these characters is found in subterranean and aerial apetalous flowers. In the plant under consideration as well as of a number of other acaulescent forms where the apetalous flowers are born under or near the ground the peduncles are recurved below the flower, and the short style is always found curved towards the peduncle. The two stamens also are on the side of the pistil facing the recurved stalk of the flower (See Fig. 1a). Of all the specimens which I have examined in sufficiently early stages of growth, I have found either well developed pollen grains in the undehiscent anthers or when already dehiscent, the pollen tubes growing from the grains into the stigma and style. I have not found a single apetalous flower entirely devoid of well developed stamens. The pollen grains are readily seen with the low power of an ordinary compound microscope, one inch ocular and two-thirds inch objective. (Fig. 3.)

Before dehiscence particularly the pollen grains vary greatly in size. The walls are not as thick as in those of the petaliferous flowers, which average about 37.5μ , the variation being only two or three microns. Those of the apetalous flowers range from 23.7μ to 52μ in diameter, and have not the peculiar three plate lids on the surface through which the pollen tubes find their exit, characteristic of the pollen of the petal bearing flowers.

Pollen in stages producing pollen tubes were also found in the few apetalous aerial flowers of *Viola rostrata* examined. In this the peduncle is not recurved below the flower; the style with more or less abruptly recurved stigma is longer and the spatulate stamens are five in number instead of the two of the acaulescent forms. Should further examination of caulescent and acaulescent violets substantiate this variation in number as constant, a new and important character of distinction of the groups is presented helping to emphasize the fact that they may well be considered, as Spach does, to be different natural genera.

PLATE 2.—*Viola candidula* Nwd. (Natural size.) Parts of spring flower separated. Drawn in late spring phase as the apetalous flowers were beginning to appear, one larger summer leaf also shown. Lower right hand corner: ovary. Same with stamens in place, upper petal, lateral petal, lower petal.

PLATE 3.—Parts of apetalous summer flowers, and (fig. 4) hairs of lateral petals of spring flowers of *Viola candidula*.

FIG. 1a.—Pistil of apetalous flower with stamens appressed to the stigma. (Side view.) A minute sterile stamen on the left between the two fertile ones.

FIG. 1b.—A fertile stamen with four anther sacs. Pollen escaping from the subapical cleft in the two larger sacs. Rudiment of another sterile stamen at the base. [Magnified about 30 diameters].

FIG. 2a.—Cross section showing arrangement of the parts of the apetalous summer flowers. A, position of the recurved petiole. B, sepals, subequal. C, 2 stamens bearing fertile anthers and inserted always next to the petiole A. (The third sterile stamen is ordinarily absent.) D, ovary with ovules.

FIG. 2b.—Front view of pistil with two stamens. (Same as Fig. 1a of another flower without the third sterile stamen.)

FIG. 3.—Side view of recurved style and stigma showing pollen grains sending pollen tubes into the hollow style.

FIG. 4.—Hairs of the beard of the lateral petals greatly magnified. The hairs are spirally striate under high magnification and round, not flattened except in age.

Dept. of Botany,

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Some Littoral Algae of Puget Sound.

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The following study was made at the Puget Sound Marine Station, during the summer of 1909, mainly in the months of July and August. A general survey of the ground had been made the previous summer. Its purpose was to determine what types of algae inhabit the tide-pools; why they prefer these places and how they are specially adapted to such places. The study was made with special reference to *Prionitis*, which seems to be the one prevailing type in all these tide-pools, and showing considerable variation with variety of environment.

The work was suggested and outlined by Professor T. C. Frye, acting director of the Station. No such study had yet been made in this region, though a study somewhat similar in its general character was made by Skinner (8) at Port Renfrew, B. C. The conditions there are quite different, and his study does not attempt to relate types to environment, nor is it specially directed to any

particular form. In the 1906 Postelsia there is a report by Isabel Henkel (3) on the tide-pools near Fort Renfrew, B. C. from the standpoint of their origin. It is mostly geological in character and only incidentally refers to the algae there found. In that place the tide-pools are of unusual character, large and deep, mostly in sand-stone. In my study the term tide-pool includes anything from a few pints to many gallons, left by the receding tide or splashed by the spray above tide-mark.

The plants were identified by comparison with the collection at the Station and are named according to Setchell and Gardiner's "Algae of North-western America," except Nos. 1 and 2, which were identified and named by comparison with the private collection of A. S. Foster of Aberdeen, Wash. and with the collection at the University of Ill. in which these were named by Professor Tilden of the University of Minnesota. No. 3, also, is the name given by Professor Tilden to a specimen from the north end of San Juan Island, closely resembling, if not identical with those classed by me under that name. There was some doubt as to whether all the *Prionitis* should be classed as variations of one species or as distinct species. Setchell, (5) discusses the same question in regard to *Ulva*, holding that it is merely one species, with much variation due to differences of environment.

The list of places named does not pretend to cover the entire Sound region but it is fairly typical and sufficiently exhaustive. There are no pools at the south end of the Sound, where the shores are mostly of clay or gravel. They are best represented about the island regions and are most typical where these studies were made. In an Ecological study by Wylie (9) of a small rocky island off the south end of Lopez Island *P. Lyallii* is reported further south than any point studied by me. Many regions were studied or noted that are not included in this report. Only those were included which were considered most typical. They were mostly made at extreme low tide in order to make comparisons possible. They are numbered in the order in which they were studied.

I. Brown's Island, chiefly west side and south end.

1. *Melobesia marginata*, forming reddish-brown incrustations on rocks at the high-tide line and in shallow pools.
2. *Peyssonellia dubia*, rather thick incrustations in crevices

or other protected places, from mid-tide to lowest visible depths; sometimes on loose rocks or shells.

3. *Prionitis lanceolata*, in tufts on the margin of the pools.

4. *Prionitis Lyallii*, coarser, less divided and lighter colored than No. 3 and characteristic of mid-tide or deeper.

5. *Polysiphonia californica*, growing in fine masses in the deeper water; sometimes in shallow water or on loose rocks.

6. *Rhodomela larix*, growing in large coarse masses in deeper water, and most abundant at low tide.

II. Shaw's Island, south end; pools larger, greater variety in size, elevation and light relation.

No. 1, almost wholly absent in this region; cause unknown.

No. 2, good display at lower depths in protected crevices.

No. 3, abundant at mid-tide, showing marked contrasts in size of plants and profusion of branching.

No. 4, large size, mid fronds nearly a foot long; branching, less profuse, lateral; color, yellowish.

No. 5, a small amount at low tide.

III. Minnesota Reef, a rock about two miles south-east of I. totally submerged at extreme high tide (spring-tide) and hence was visited at the ebb of spring-tide. It is very rich in amount and variety of material, but is not strictly tide-pool in character at all times.

No. 1, very rare and of little importance here.

No. 2, abundant; some on shells and loose rocks and it could be seen at inaccessible depths.

No. 3, present in considerable quantities, finely divided.

No. 4, as described in II, good specimens. This varied enough to suggest two or three species or varieties.

No. 5, in great masses; optimum conditions.

No. 6, as in I. almost below tide-pool conditions.

No. 7, *Ulva lactuca*, in medium abundance at low tide.

No. 8, *Gigartina mammosa*, not abundant nor important.

Corallina and *Amphiroa* were also found here in considerable abundance, but scarcely in tide-pool conditions; hence they will receive no further consideration. These have been treated in a monograph by Yendo (10).

IV. Unnamed rock, $\frac{1}{2}$ mile south of III. This gave the same indications as III. with greater variety in *Prionitis*, as it extends above high-tide, affording small pools filled by spray

and always exposed to sun and air; consequently warmer than pools below the tide-line; sometimes reaching 70°F. At this and the previous place, III., temperatures were taken; they ranged from 53°F to 63°F. Thus, allowing 10 ft. between low and high (it is nearly 12 ft.) there is an average difference of 1° for each ft. of altitude.

V. Argyle Bay. This is really the outlet to a large pond or basin that is drained almost completely when tides are lowest. The flood comes in over an expanse of warm gravel and the pool is shallow so the water may reach at times a temperature of 60° to 70°F. At the outlet the water is constantly flowing either in or out with considerable current, thus renewing the air and food supplies.

Nos. 1 and 2 are not found here as the banks are loose gravel instead of solid rock; and the quiet water conditions of other places do not exist.

No. 4, however, is found attached to large pebbles on the bottom and attaining great size; fronds over a foot in length and over an inch in width.

No. 5, also in great abundance fastened to pebbles.

Nos. 6, 7 and 8, though present are rare and not important, but No. 9, *Enteromorpha linza* finds this a most congenial place.

VI. Roche Harbor, Henry Island and Ship Island. These show nothing new and are of interest only in so far as they confirm the conclusions already reached in the study of *Prionitis* and its variations elsewhere.

VII. "Gull Rocks," just off west side of Waldron Island. Excellent pools, varying in size and altitude, but containing almost nothing of interest except *Prionitis*. The conditions as to altitude, temperature, etc., are similar to those described under IV.

VIII. Kanaka Bay, also known as False Bay, south end of San Juan Island, drains completely at extreme low tide, when study was made east side of entrance.

This afforded a number of small pools and one larger than any found elsewhere; especially good. Although there is a great variety of material in this region there was nothing new in tide-pool conditions, except 10, *Soranthra* sp. *Prionitis* shows a greater variety of size and form here than possibly in any other place examined. It is doubtful whether it could all be classed under the two species, 3 and 4. Possibly it should all be classed as one

species with much variation due to difference of environment.

IX. Sucia Islands, south side.

This was excellent ground for this study. The rock is softer and larger pools have been worn in them. They are more exposed to the sweep and surge of the tide and surf and better test the character of *Prionitis*. This region is a resumé of all the others with enough new features to settle some of the problems raised by them. In other places the plants were more protected, which seemed to account for the presence of *Prionitis* rather than the higher temperatures or better light exposures. Long troughs are cut in the sea-floor which retain sufficient water at lowtide to support large quantities of *Prionitis*, but none is found there, evidently because the waves and tide sweeping the full length of the troughs sweep out this seemingly fragile plant, which is not adapted to such a strenuous existence. Why it has not become so adapted is another question.

DISCUSSION.

Prionitis is probably the only alga found exclusively in tide-pools and not elsewhere. It is found outside of tide-pools, properly so called and at greater depths than these, but in tide-pool conditions, essentially, and hence real tide-pools. *Rhodomela* seems to prefer the pools and probably for the same reason as *Prionitis*. Although abundant and nearly always found associated with the former, it is also found in crevices and protected places, in essentially tide-pool conditions, but deeper than its associate. It seems to shun extreme light and higher temperatures, which are found at higher altitudes. I thought at first that the plant went deeper only to find a firmer anchorage and shunned loose rocks, but I afterwards found it on rock fragments and shells; but these must, however, be protected from rolling and abrasion.

Prionitis is also more abundant where *Rhodomela* or like plants are present to afford protection; whether as points of attachment for young plants or later against strong currents is not apparent. It is preeminently not a surge-plant. It must have a protected nook or hollow. It does not grow on a sloping ledge as does *Calpomenia*; nor on a sheer rock wall as does *Fucus*; nor on a surf-beaten shore as does *Postelsia*. It exudes no slime and can not endure exposure to the air as does *Fucus*. It must grow in a pool or some protected place where it may secure much flowing

water, as at Argyle Bay, and frequent exposure to the air for a short time is advantageous. Exposure to light seems to be of secondary importance.

Its presence in tide-pools may be due, in part to the abundance of animal life there, such as small crabs, snails, etc., which would furnish abundant CO_2 and preserve the well-known balance of plant and animal life. According to this view, however, if true, *Prionitis* should be able to grow in the center of pools as well as on the margins; but there it is not found. Possibly the gases accumulate on the margin. This point was not investigated for want of apparatus. This would be interesting and perhaps a profitable point for future investigation.

It was suggested at the outset that the difference in dissection, greatest at the top or upper tide-line and above, might be an adaptation to higher temperatures which would diminish the amount of gas and hence call for more exposure surface, which could be accomplished by more minute dissection of the fronds. This, however, does not seem to be true. In fact the opposite tendency is shown by Theoderesco (7) who, using certain liverworts for his investigations, found that the fronds of the thallus became shortened and more dissected when the concentration of the CO_2 was increased.

This question was later taken up by the writer (2) in a somewhat extensive study on freshwater algae in which it appears that the plant body becomes more compact when the CO_2 accumulates and that the alga is much concerned with its oxygen relation as well as with that of CO_2 .

In this connection I would cite the luxuriant growth of *Ulva* and *Alaria* at Olga and at Cattle Point, in the quiet shallow bays where the water becomes quite warm, 64°F . or more. These, with their broad thin leaves, are not adapted to rough water nor even to a strong current, but to quiet shallow bays with a pebbly bottom.

The finer dissection of *Prionitis* at the higher altitudes seems to be an adaptation to meet the force of the surf and strong currents, while the broad, simple fronds of the deeper levels are adapted to more quiet waters, and are especially prominent at Argyle Bay, where there is no surf but only a strong uniformly flowing current which rapidly renews the supply of CO_2 without the danger of dislodgement or tearing. It is worthy of note that the light ex-

posure is as great here as elsewhere. Rigg (4) mentions the fact that certain kelps show a variation in thickness and other features of form, coordinate with different degrees of exposure to violence of waves. Whether the dark brown color of the topmost plants, as contrasted with the yellowish tinge of the lower ones could be a color adaptation was not considered.

Setchell (6) mentions this color variation in kelps with increase of depth but does not offer any explanation nor suggest any idea of adaptation. Blackman (1) however, agrees with Gaidukov in the notion that the yellow color found in deeper waters is a chromatic adaptation to the complementary color of the rays coming through the blue water.

The problem of *Prionitis*, then, seems not to be so much the procuring of greater light and a warmer temperature but the supply and exchange of gases. In the pools the plants could attach themselves to the bottom as well as to the margin; but air and presumably CO₂ are not available at the bottom. So it seems that the small plants must begin life and the adults continue to remain around the margins, where gases are available and to do this must adapt themselves to a life of exposure on the one hand by increased dissection of the fronds, increased toughness and darker color and diminished size while the opposite of these are suited to a sheltered life.

CONCLUSION.

1. *Prionitis* is adapted to a considerable range of temperature, but seems to prefer the warmer places.
2. *Rhodomela* is adapted to nearly as wide a range of temperature, but seems to prefer the cooler places.
3. Both seek protected nooks and pools.
4. The problem of *Prionitis* seems to be that of food (CO₂) and shelter rather than of heat and light.

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- coast of Vancouver island. *Postelsia*, Year Book Minn. Seaside Station 1906: 277-304. 1906.
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 5. Setchell, W. A. and Gardner, N. L. Algae of northwestern America. Univ. Cal. Pub. Bot. I. 165-418. 1903.
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Notes on Our Local Plants.—IV.

BY J. A. NIEUWLAND.

Order II. XYRIDALES.

Britton, Man. 2nd. ed. p. 234. (1905.)

Family 24. **XYRIDEAE** Salisb. Trans. Hort. Soc. 1, p. 326, (1812). H. B. K. Nov. Gen. I., p. 203, (1815). Dum. An. Fam., p. 55, (1929), Agardh, Aphor. Bartling Ord. Nat., p. 23 and 27, (1830), also Spach, Hist. Nat., p. 131, (1846). Desv. Ann. Sc. Nat. V. 13, p. 149, (1836). *Xyridaceae* Lindley Nat. Syst. ed. 2, p. 388, (1836).

KOTSJILLETTIA Adans. Fam. des Plantes, 2, p. 60, (1763) ex Rheede. Hort. Mal. 9, t. 7, p. 139.

XYRIS Gronovius. Fl. Virg. p. 11, (1739), also Fl. Zeylan. p. 35. Linnaeus, Gen. Pl. p. 11, (1737)¹, p. 24, (1742). Sp. Pl.

¹ Referred by Linnaeus to Gronovius here, and hence credited above to that author, even though first found used by the former.

p. 42, (1753). Syst. p. 91, (1756). Van Royen, Fl. Leyd. p. 20, (1740). not *Nyris* of Theophrastus, Dioscorides, Gesner, Parkinson, p. 256, (1629), nor of pre-Linnaean authors generally = *Iris foetidissima* Linn. *Schizmaxon* Steudel, Bot. Zeit., p. 391, (1856). An hoc seg. (?) *Jupica*, *Ramotha*, *Synoliga* Raf. Fl. Tell. II., p. 15, (1836).

Kotsjillettia flexuosa (Muhl.)

XYRIS FLEXUOSA Muhl. Cat. 5, (1813).

Laporte Co. (Barnes), Lake Co. (Hill), Lake Maxinkuckee [Marshall Co.] (H. W. Clarke), Sheffield, Ind. [Lake Co.] (Higley & Raddin), Tamarack [Lake Co.], Mineral Springs [Porter Co.].

Family 25 **ERIOCAULONEAE** L. C. Rich. An. Mus.

Paris, v. 17, p. 52, (1811).

Eriocaulaeae Dum. An. Fam. p. 55, (1829) also Bartling, lc. p. 36, as a subfamily.

Eriocaulaceae Lindley, Veg. Kingd. p. 122, (1847).

ERIOCAULON Plukenett, Amalth. t. 409, f. 5, (1705).

Eriocaulon Linn. Gen. Pl. p. 35, (1742); p. 38, (1754); Syst. Nat. p. 92, (1756); Sp. Pl. p. 87, (1753); Gronovius Fl. Virg. p. 13, 14, (1739. *Randalia* Petiver, Gaz. t. 6, f. 2, (1702, 1769); also Beauv. ex Desv. Ann. Sc. Nat. Ser. I., p. 47, t. 5, XIII., (1828).

Eriocaulon septangulare With. Bot. Arr. Brit. Pl. p. 784, (1776).

Nasmythia articulata Huds. Fl. Angl. Ed. 2., p. 415, (1778).

Eriocaulon articulatum (Huds.) Morong. Bull. Torr. Cl. 18, p. 353, (1891).

[Laporte Co.], (Hill); Bass Lake, [Marshall Co.]; St. Joseph River, [St. Joseph Co.]; Mineral Springs, [Porter Co.]; Bankson Lake, [Van Buren Co., Mich.]; N. D. U. Herb. 2430, 2254, and 9503.

Family 26. **COMMELYNEAE** R. Brown. (1810).

Commelinaceae Reichenb. Consp. p. 57, (1828), also Lindley Nat. Syst. Ed. 2, p. 354, (1836). *Commelyneaceae* C. B. Clarke Monogr. Phaner. III., p. 131, (1881).

COMMELINA Plumier Nov. Pl. Am. Gen. p. 48, (1703); also Linn. Syst. (1735); Gen. Pl. p. 21, (1737); p. 23, (1742); p. 25, (1754); Hort. Cliff. p. 21, (1737); Sp. Pl. 40, (1753); Van Royen, Hort. Leyd. p. 38, (1740); Boerhaave, Ind. Alt. Pl. p. 237, (1720), (1727).

Commelina virginica Linn. Sp. Pl. ed. 2, p. 61, (1762).

St. Joseph and Benton Harbor, Mich. [Berrien Co.]; Lake Co., (Hill). Miller's [Lake Co.] Babcock. St. Mary's [St. Joseph Co.] N. D. Herb. 9415. I have found it in several other places in the county notably at South Bend where it escaped from gardens. The plant, appears every year around dumps and in barnyards along fences, when once established.

TRADESCANTIA Linn. Syst. (1755); Gen. Pl. p. 98, (1737); p. 37, (1742); p. 38, (1754); Hort. Cliff. p. 126, (1737); Sp. Pl. p. 288, (1753); Van Royen Lugd. p. 37, (1740).

Ephemerum Morison, Oxon. p. 506, (1635); Tour. Els. Bot. p. 295, (1694); I. R. H. p. 357, (1700); Moench. Meth. p. 23, (1794) not *Ephemerum* Dioscorides = *Polygonatum multiflorum*, nor *Ephemerum* Theophrastus. *Ephemero-phalangium*² Magnol Charact. p. 241, (1720).

Tradescantia virginica Linn. Sp. Pl. p. 288, (1753), *Ephemerum congestum* Moench. lc. p. 238.

Found by me only in the dune region of Lake Michigan at Dune Park, Ind. [Lake Co.]; also at Millers, Ind. The plant is much smaller than the following for which it is often taken. The plant may even be distinct from the eastern type.

Tradescantia reflexa Raf. New Fl. N. Am. II., p. 87, (1836).

Lake Maxinkuckee, (H. B. Clarke) (?) probably. Clarke, [Lake Co.] (Umbach); [Marshall Co.] (Deam); [St. Joseph Co.] (Powers); N. D. Herb. No. 1953; Chain Lake [St. Joseph Co.] N. D. Herb. No. 2087. A perfectly white flowered specimen was collected near Warwick [St. Joseph Co.]. The bracts of the involucre are not reflexed.³ I have found this common plant in all the counties with the range of the notes, and in numerous places in every county.

Family 27. **PONTEDEREAE** H. B. K. Nov. Gen. and Sp., 1, p. 265, (1815).

Pontederiaceae Dum. An. Fam. Pl. p. 59, (1829); also Meisner, Gen. p. 298 [300], (1842), etc.

² Name ineligible because too long and composite.

³ Am. Mid. Nat., Vol. 2, p. 265.

NARUKILA Rheede H. M. v. 11. t. 34, (1692); also Adans. Fam. des. Pl. p. 54, (1763).

PONTERDERIA Linn. Syst. (1735), Gen. Pl. p. 102, (1737); p. 138, (1742); p. 140, (1754); Hort. Cliff. p. 133, (1737); Sp. Pl. p. 288, (1753); Gronovius, Fl. Virg. p. 37, (1739). *Michelia* Houston, ex Linn. Gen. Pl. (1742) p. 138 MSS. ined usque (1784-1791) not *Michelia* Linn. Syst. (1735) and p. 118 Syst. (1756), nor Linn. Gem. p. 119, (1756), nor Sp. Pl. 577, (1753).

***Narukila cordata* (Linn.).**

PONTERDERIA CORDATA Linn. Sp. Pl. 1. c.

Miller's Ind. (Umbach); [Laporte Co.] Barnes; [Lake Co.] (Deam); [Marshall Co.] (Coulter); Lake Maxinkuckee, H. B. Clarke; Miller's, Ind., U. N. D. Herb. No. 2153; Hudson Lake [Laporte Co.] No. 741; Bankson Lake, No. 656. I have found it in every county.

***Narukila cordata* var. *lancifolia* (Muhl.).**

Pontederia cordata var. *lancifolia* (Muhl.) Morong. Mem. Torr. Cl. 5: p. 105, (1896). *Pontederia lancifolia* Muhl. Cat. 34, (1813). A good specimen from Millers, Ind. collected by Umbach is in the U. S. National Herbarium.

HETERANTHERA R. & P. Fl. Peruv. & Chil. Pr. p. 9, (1794).

Schollera Schreb. Gen. p. 785, (1789), not *Schollera* Roth. Tent. Fl. Ger. 1. p. 165, 170, (1788).

Heteranthera dubia (Jacq.) MacM. Met. Minn. p. 138, (1892).

[Laporte Co.] Barnes; Lake Maxinkuckee [Marshall Co.], H. W. Clarke.

Order 12. LILIALES.

Britton, Man. p. 244, (1905) in part. *

Family 28. JUNCOIDEAE Gerard, Fl. Gallo Pr. p.

138, (1761).

Juncaceae Vent. Tabl. 2, p. 150, (1799).

JUNCUS Pliny, Hist. Nat. and of all pre-Linnaean writers.

Juncus Tour. Els. Bot. p. 212, (1694); I. R. H. p. 246, (1700); Linn. Syst. (1735); Gen. Pl. p. 104, (1737); p. 150, (1742); p. 152, (1754); Sp. Pl. p. 325, (1753).

Juncus effusus Linn. Sp. Pl. p. 326, (1753).

Lake Maxinkuckee, (H. W. Clarke); [Lake Co.] (Hill); [Laporte Co.] (Deam); etc. I have found it in all the counties in the range. No. 9347, Notre Dame.

Juncus balticus Willd. Berl. Mag. 3. p. 298, (1809).

[Lake Co.] (Hill); [Lake & Laporte Cos.] (Deam); Millers, Ind. [Lake Co.]; No. 581 and 9347, U. N. D. Herb.; Tamarack and Mineral Springs [Porter Co.]; [Van Buren Co. and Berrien Co.], Mich.

Juncus bufonius Linn. Sp. Pl. p. 328, (1753).

Lake Maxinkuckee (H. W. Clarke); [Porter Co.] (Deam); [St. Joseph Co.]; Tamarack [Porter Co.]; Benton Harbor [Berrien Co., Mich.]; [Van Buren Co., Mich.].

Juncus tenuis Willd. Sp. Pl. 2, p. 214, (1799).

[Lake Co.] (Hill); Notre Dame, N. D. Herb. 276 and 9309; Lake Maxinkuckee (H. W. Clarke). I have found it in every county.

Juncus Greenii Oakes & Tuckerm. Am. Jr. Sci. 45 p. 37, (1843).

[Lake Co.] (Hill); Miller's, (Bastin); Whiting, Ind. [Lake Co.] (Higley and Raddin).

Juncus marginatus Rostk. Monog. Junc. 38, pl. 2, f. 3, (1801).

[Lake Co.] (Deam); Whiting, Ind. [Lake Co.] (Higley & Raddin).

Juncus canadensis J. Gray. Laharpe, Monog. Junc. p. 134, (1825).

Lake Maxinkuckee (L. C. Clarke); [Laporte Co.] (Deam); Millers (Hill) also (Higley & Raddin); Tolleston & Pine (Hill).

Juncus pelocarpus E. Meyer, Syn. Luz. p. 30, (1823).

Fish Trap Lake, [Laporte Co.] (Deam); [Laporte Co.] (Barnes).

Juncus robustus (Engelm.) Coville in Britton, Ill. Fl. N. Am. 1. p. 395.

Lake Maxinkuckee (L. C. Clarke).

Juncus richardsonianus Schult. in R. and S. Syst. 7, p. 201, (1829).

[Lake Co.] (Deam, also Hill); Colehour & Casella, Ind., Sheffield Ind. (Hill).

Juncus nodosus Linn., Sp. Pl. Ed. 2, p. 466, (1762).

[Lake Co.] (Hill); Millers (Hill); Berry Lake [Lake Co.] (Higley & Raddin); Notre Dame, South Bend, Webster's Crossing, etc. [St. Joseph Co.]. Nos. 11207 and 11208. Very common.

Juncus Torreyi Coville, Mem. Torr. Cl. 22, p. 303, (1885).

[Laporte Co.] (Deam); [Lake Co.] (Deam also Hill.)

Juncus brachycarpus Engelm. Trans. St. Louis Acad. 2, p. 467, (1868).

[Marshall Co.] (Deam).

Juncus scirpoides Lam. Encyc. Meth. Bot. 3, p. 267, (1789).

[Laporte Co.] (Hill); Tolleston (Hill); Millers (Bastin).

Juncus brachycephalus (Engelm.) Buch. in Engelm. Bot. Jahrb. 12, p. 268, (1890).

Juncus canadensis var. *brachycephalus* Engelm. Trans. St. Louis Acad. 2, p. 474, (1868).

[Lake Co.] (Deam); [Laporte Co.] (S. Coulter).

Juncus Dudleyi Wiegand, Bull. Borr. Bot. Cl. p. 524, (1900).

[Laporte Co.] (Deam).

Juncus acuminatus Michx. Fl. Bor. Am. I, p. 192, (1803).

Millers, (Hill); Lake Maxinkuckee (L. C. Clarke); Pine, Ind. (Higley & Raddin).

LUZULA Anguillara, Semp. (1561) also *Luzula* De Candolle, Fl. Fr. 3, p. 158, (1805); *Cyperella* V. Cordus, Annot. (1561); also Conrad Gesner, Hort. Germ. (1561); *Luciola* Caesalpinus De Plantis, p. 185, (1583); also Smith Engl. Fl. p. 177, (1824); *JUNCOIDES* Micheli Nov. Pl. Gen. p., (1729); also Moehring, and Adanson, Fam. des Pl. p. 47, (1763); Scheuchzer, Agrost. p. 310, (1719) & (1775); *Juncodes* O. Kuntze. Rev. Gen. II., p. 722, (1891). *Ischaemon* Schmiedel in Ges., Hist. Pl. p. 13, (1759), not *Ischaemum* Linn. Gen. Pl., p. 529, (1742), nor Sp. Pl.

Luzula campestris (Linn.) D. C. l. c.

Juncus campestris Linn., Sp. Pl. p. 329, (1753).

Juncoides campestre (Linn.) Britton. Fl. N. Am. I, 398, (1896).

Lake Maxinkuckee (Clarke); I have found the plant in all the counties in the range. Very common and abundant. U. N. D. Herb. No. 3315; Benton Harbor, Mich. [Berrien Co.], No. 10099; 11108 and 11106, Mineral Springs [Porter Co.]; No. 9142 Stude-

baker's Woods, South Bend, [St. Joseph Co.]; Nos. 11058, 11152 and 9115 North of Notre Dame.

Luzula saltuensis Fernald. Gray's Man. 7th Ed. p. 279, (1908).

I have found this plant only in two widely different places. East of Benton Harbor [Berrien Co.], Mich. No. 11032, and North of Notre Dame at Webster's Crossing, No. 11199, U. N. D. Herb.

Family 29. **MELANTHACEAE** R. Brown Prod. I, p. 272, (1810).

Melanthideae Dum. Comm. Bot. p. 66, (1823); also Fl. Belg. p. 141, (1827).

TOFIELDIA Hudson, Fl. Augh. Ed. 2, p. 157, (1778).

Tofieldia glutinosa (Michx.) Person, Syn. I, p. 399, (1805).

Narthecium glutinosum Michx. Fl. Bor. Am. 1, p. 210, (1803).

[Lake Co.] (Hill, also Deam); Pine, Millers & Edgemoor (Higley & Raddin).

UVULARIA Linn. Gen. Pl. p. 95, (1737); p. 143, (1742; p. 144, (1754); Hort. Cliff. p. 121, (1737); Sp. Pl. p. 304, (1753); Van Royen, Hort. Lugd. p. 29, (1740).

Uvularia grandiflora J. E. Smith, ex. Bot. 1, p. 99, pl. 51, (1894-1805).

[Laporte Co.] (Deam). Common in all the counties. U. N. D. Herb., 3243, 1988, 1989. Notre Dame (Powers), No. 2718; Stephenville [Berrien Co.], Mich.

MELANTHIUM Linn., Gen. Pl. p. 524, (1742); Sp. Pl. p. 339, (1753).

Melanthium virginicum Linn., Sp. Pl. 1. c.

West of South Bend, Ind. [St. Joseph Co.]; N. D. U. Herb., No. 2746. Still rather abundant but will soon disappear by reason of draining of swamps, and encroachment of cultivation.

Family 30. **ALLIACEAE** Batsch, also *Alliaceae* Dum. An. Fam. p. 61, (1829) as a tribe of *Liliaceae*. *Cepacae* Salisb., Gen. Pl. Lir. p. 88, (1866) as order. *Alliace* Kunth, Enum. pl. 4, p. 379, (1843).

VALIDALLIUM Small, Fl. S. E. U. S. p. 264, (1903).

Aglytheis Raf. Fl. Tell. II., p. 17, (1836)? or *Geboscon* Raf.

Cat. 14, (1824), Fl. Tell. (?) l. c. - Adest quaedam confusio et nomina incerta?

Allium Linn. l. c. in part.

Validallium tricoccum (Ait.) Small l. c.

Allium tricoccum Ait. Hort. Kew. 1, p. 428, (1789).

[Porter Co.] Deam); N. Liberty, Ind. [St. Joseph Co.]; N. D. U. Herb. N. 527, 827. I have found it also at Lapaz Junction [Marshall Co.]; No. 11206 S. of South Bend, Studebaker's Woods [St. Joseph Co.]; Munich and Scottdale, Mich. [Berrien Co.].

ALLIUM PLINY.

Allium Tournefort, Els. Bot. p. 304, (1694), also I. R. H., p. 383, (1700); Linn. Syst. (1735); Gen. Pl. p. 103, (1737); p. 141, (1742); p. 143, (1754); Sp. Pl. p. 294, (1753); Royen, Hort. Ludg. p. 38, (1740); and of all the pre-Linnaeans generally.

Old genus **CALLIPRENA** Salisb, l. c. p. 89.

Allium cernuum Roth. Roem. Arch. 1, pt. 3, p. 40, (1798).

Lake Maxinkuckee (Clarke); [Lake Co.] (Hill); [St. Joseph Co.] (Barnes). Abundant in places. I have found it in Porter, St. Joseph, Laporte, Berrien and Van Buren Co., U. N. D. Herb. 9326, 899, 2758.

Allium canadense Linn., Sp. Pl. p. 1195, (1753).

Granger, Ind. [St. Joseph Co.]; also [Elkhart Co.]; Notre Dame No. 11209.

Old Genus **HEXONYCHIA** Salisb. p. 88, l. c.

Allium stellatum Ker., Bot. Mag. pl. 1576, (1813).

In Kosciusko Co., acc. to State Cat.

Allium vineale Linn. Sp. Pl., p. 299, (1753).

[St. Joseph Co., also Berrien Co.], scarce.

Family 31. **LILIACEAE** Clusius, Panon. p. 231, (1585); Linnaeus, Phil. Bot. p. 28, (1751); also p. 28, (1755); Zinn, Cat. Pl. Gott. p. 89, (1754) in part Haller. Enum. Pl. Hort. Gott. p. 19, (1753).

Asphodeleae Bartl. Ord. Nat. Pl. p. 49, (1830).

Subfamily. **TULIPACEAE**. Bart. l. c. p. 50.

Lilioideae Engl. Fuhrer Bot. Gart. Bres. p. 25, (1886).

LILIUM Pliny, Vergil, Columella, X. 99, etc.

Lirion Theophrastus, Theocritus; *Lirium* Linnaeus Syst. (1735); Hort. Cliff. p. 120, (1737); *Krinon* Dioscorides, 3, 116. *Lilium* J. Bauhin. Tour. Els. Bot. p. 297. (1694), I. R. H. p. 369, (1700); *LILIUM* Linn., Gen. Pl. p. 91, (1737); p. 142, (1742); p. 143, (1754); Sp. Pl. p. 202, (1753).

Lilium umbellatum Pursh, Fl. Am. Sept. o, 228, (1814).

Lilium andinum Nutt. Fras. Cat. (1813) nomen nudum.

Olivers, West of South Bend. Meadow and Railroad U. N. D. Herb. No. 2741 and 2742.

Lilium canadense Linn., Sp. Pl. p. 303, (1753).

Lake Maxinkuckee, (Clarke), also [Marshall Co.] (Deam).

Lilium superbum Linn., Sp. Pl. Ed. 2, p. 434, (1762).

[Laporte and St. Joseph Cos.] (Barnes); Notre Dame, Ind. U. N. D. Herb. No. 1821; Bankson Lake, Mich. [Van Buren Co.]; Nos. 2334, 9093 U. N. D. Herb. I have found this in Porter, Elkhart, Berrien, Lake and Laporte counties also. Rather common and abundant.

Lilium tigrinum Andr. Bot. Rep. 9, (1809).

Escape into the woods at Notre Dame, growing perfectly wild and maintaining itself as also spreading.

ERYTHRONIUM Lobelius, Obs. p. 97, (1576).

Erythronium Linn., Syst. (1735); Hort. Cliff. p. 19, (1737); Gen. Pl. p. 92, (1737); p. 142, (1742); p. 145, (1754); Sp. Pl. p. 305, (1753). *Dentali* Clusius Hist. Stirp. Pannon. p. 228, (1583); *Dens canis* Tour. Els. Bot. p. 301, (1694); I. R. H. p. 378, (1700); *Mithridatium* Adans. Fam. p. 48, (1763).

Erythronium albidum Nutt. Gen. 1, p. 223, (1818).

Lake Maxinkuckee (Clarke). I have found the plant at Notre Dame, along the St. Joseph River in low woodland. The specimens are not abundant and are fast disappearing so that it can be considered as quite rare.

Erythronium americanum Ker. Bot. Mag. pl. 1113, (June, 1808).

Erythronium augustatum Raf. Med. Rep. 2, 5, p. 354, (July 1808).

Notre Dame, Ind.; Navarre Place; U. N. D. Herb., No. 1915; Mud Lake, 7 miles N. of Lydick, Ind.; [St. Joseph Co.] No. 807;

Studebaker's Woods, South Bend, No. 9426; Munich, Mich., [Berrien Co.], No. 9216. I have found the plant in all the counties without collecting or out of the season of flower or fruit. At Munich, Mich., specimens with black anthers and stamens were growing together with others having yellow ones. No other notable differences were observed in the plants. No. 11010 Lapaz Junction.

Subfamily SCILLEAE Reichenb. Consp. p. 65, (1828) in *Ornithogaleae* Salisb. l. c.

ORNITHOGALUM Nicander, Dioscorides.

Ornithogalum Linn., Syst. (1735); Hort. Cliff. p. 124, (1737); Gen. Pl. p. 95, (1737); p. 145, (1742); p. 145, (1754); Tour. Els. Bot. p. 301, (1694); I. R. H., p. 378, (1700); *Stellaris* Dillen, Gen. 110. *Celsia* Heister, Syst. p. 86, also Syst. p. 5, (1748).

Ornithogalum umbellatum Linn. Sp. Pl., 307, (1753).

Escaped at Notre Dame, Ind., also St. Joseph, Mich.

MUSCARI Clusius, Pannon, p. 202, (1583).

Muscari P. Miller, Gard. Dict., ed. 7, (1759); *Botryphile* Salisb. Gen. Pl., p. 25, (1866); *Botryanthus* Kunth, Enum., Pl., 4, p. 310, (1843) as a segregate.

Muscari botryoides (Clusius) Miller. Gard. Dic. ed. 8, (1768)

Hyacinthus botryoides Clusius l. c. p. 204, (1583); also Linn., Sp. Pl. p. 318, (1753).

Escaped at Notre Dame. It does not spread as readily as the following. Bertrand [Berrien Co.], Mich.

Muscari racemosum (Linn.) Miller l. c. *Hyacinthus racemosus* Linn. l. c.

Very well established in a sandy field N. W. of St. Mary's, Notre Dame, and spreading along a road very fast. No. 11034.

Subfamily. ALETROIDEAE. Engler and Prantl. Pflanz. Fam. 2, 5, p. 85, (1886).

ALETRIS Linn., Nov. Gen. Pl. p. 15, (1751); Gen. Pl. p. 149, (1754); Sp. Pl. p. 319, (1753); also *Alethriss* Amoen. Acad. III., p. 11, (1756).

Aletris farinosa Linn. l. c., also Amoen. Acad. l. c.

[St. Joseph Co.] Barnes; [Lake Co.] Blatchley also Deam; St. Joseph Co. and Elkhart Co.; U. N. D. Herb., No. 73; Dune Park [Lake Co.] No. 9745.

Subfamily. **HEMEROCALLIDEAE** Bart. l. c. p. 50.

Hemerocallideae Dum. Com. Bot. p. 66, (1823).

HEMEROCALLIS Dioscorides.

Cynorrodium or *Cannarhodium* Gesner. Hort. Germ. p. 245, (1561); *Hemerocallis* Linn., Syst. (1735); Hort. Cliff. p. 128, (1737); Gen. Pl. p. 98, (1737); p. 148, (1742); p. 151, (1754); Sp. Pl. p. 324, (1753), *Liliasphodelus* Tour. Els Bot. p. 279, (1694). *Lilio-Asphodelus* Tour. I. R. H. p. 299, (1700); also *Liliasphodelus* Clusius Hist. St. Pannon., p. 143, (1583). *Cameraria* Boehmer: Ludw. Def. Pl. Gen. Pl. p. 56, (1760).

Hemerocallis fulva Linn. Sp. Pl. ed. 2, p. 462, (1762); *Hemerocallis Lilio-Asphodelus fulvus* Linn. Sp. Pl. p. 324, (1753).

Extensively escaped from gardens. Considered quite a weed. Notre Dame, South Bend, Michigan City [Laporte Co], St. Joseph and Benton Harbor.

Family 32. **BACCIFERAE** Haller, Fl. Helv. 2, p. 116, (1768).

Asparagi Jussieu Gen. Pl. p. 40, (1789). *Asparagineae* Dumortier Fl. Belg. St. p. 138, (1827), also Com. Bot. p. 66, (1823). *Convallariaceae* Link, Handb. I. p. 184, (1829).

Subfamily **ASPARAGOIDEAE** Vent. Tabl. 2, p. 141, (1799).

Asparageae D. C. in Lam. and D. C. Fl. Fr. ed. 3, 3, p. 172, (1805); also Dum. l. c.

ASPARAGUS Dioscorides 2. 151; Juvenal, Sat. 5, 82; 9, 69. Theophrastus, Pliny, 19, 8 and 42; *Asparagus* of the Pre-Linnaean authors: Fuchs, (1543); Cordus and Gesner, (1561), etc., etc. Also Tour. Els. Bot. p. 249, (1694); I. R. H. p. 300, (1700); Linn., Syst. (1735); Hort. Cliff. p. 121, (1737); Gen. Pl. p. 93, (1737); p. 145, (1742); p. 145, (1754); Sp. Pl. p. 313, (1753).

Asparagus hortensis Marcellus Vergilius, in Dios. Com. p. 260, (1529). *Camerarius*, Hort. Med. Phil. p. 23, (1588). *Dodonaeus* Pempt. 5, 4, 13, (1583).

Asparagus altilis Hermolaus Barbarus, Cor. p. 38, (1530). Fuchs. Stirp. Hist. p. 20, (1546); p. 34, (1549); Ruellius, Dios. Mat. Med. p. 173, (1547); Matthioli, Com. Diosc. p. 280, (1559); p. 251, (1554). *Asparagus petraeus* Galen VI. (?). *Asparagus domesticus* Hort. Syst. Bellonius, *Asparagus domesticus vulgaris* Lobelius, Obs. p. 458, (1576). *Asparagus holeraceus* Tabernaemon-

tanus Kreuterbuch, p. 399, (1625), also Anguillara (1561). *Asparagus sativus* Gesner, 1561, *Asparagus sativa* C. Bauhin, Pinax p. 488, (1623); Tour. Els. Bot. l. c.; I. R. H. l. c.; Morandi. Hist. p. 105, (1761). *Asparagus scanensis* Linn. Pan Suecus, Am. Acad. I, p. 245, (1751). *ASPARAGUS OFFICINALIS* Linn. Sp. Pl. p. 313, (1753). *Asparagus esculentus* Salisb. Pr. 252, No. 2, (1796).

Escaped from gardens everywhere in the region. I have found it in all the counties. No. 2971, N. U. D. Herb., Notre Dame.

Subfamily MAIANTHEMEAE Dum. Fam. des Pl. p. 60, (1829).

VAGNERA Adanson Fam. des Pl. 2, p. 496, (1763). *Smilacina* Desf. Ann. Mus. Paris, 9. p. 51, (1807); *Tovaria* Necker, El. Bot. 3, p. 146, (1790); not *Tovara* Adans (1763); *Sigillaria* Raf., Jr. Phys. 89, p. 261, (1809); *Polygonastrum* Moench, Meth., p. 637, (1794); *Neolexis* Salisb., Gen. Pl. p. 64, (1866).

Vagnera racemosa (Linn.) Morong, Mem. Torr. Bot. Cl. 5, p. 114, (1894).

Smilacina racemosa Desf. l. c.; *Convallaria racemosa* Linn., Sp. Pl. p. 315, (1753); *Polygonastrum racemosum* Moench, l. c.

Lake Maxinkuckee (Clarke); U. N. D. Herb., Nos. 1956 bis. 2964 from Notre Dame. Common in all the counties. The inflorescence is sometimes laterally flat branching only on opposite sides of the rachis. No. 11211 Notre Dame.

ASTERANTHEMUM Kunth, Enum. Pl. V., p. 151, (1850). *Vagnera* Adans. l. c. segregate.

***Asteranthemum stellatum* (Linn.)..**

Asteranthemum vulgare (Linn.) Kunth l. c. p. 152.

Majanthemum stellatum Link. Enum. 1, p. 343.

Vagnera stellata (Linn.) Morong. l. c.

[Lake Co.] (Hill); [Laporte Co.] (Deam); I have found it everywhere in the range. St. Joseph, Mich. 11025, 11070.

***Asteranthemum trifolium* (Linn.).**

Convallaria trifolia Linn., Sp. Pl. p. 316, (1753); *Smilacina trifolia* (Linn.) Desf. l. c. p. 52. *Vagnera trifolia* (Linn.) Morong. l. c.

Pine, Berry Lake, Higley and Raddin. Gibson, Ind. (Babcock), [Lake Co.].

UNIFOLIUM Brunsvigius, (1500), alos *Tragus* Stirp. Hist. (1552), *Chabraeus* (1671), *Dodonaeus* Pempt. p. 20, (1583), *Zinn*.,

Cat. Pl. Gott. p. 104, (1757), Ludwig Boehmer, Def. Gen. Pl. p. 215, (1760), Adanson Fam. Pl., p. 54, (1763).

Monophyllum Ray, Hist. p. 668, (1686). *Smilax* Tour. I. R. H. p. 654, (1700); *Maianthemum* Web. Prim. Fl. Holsat. p. 14, (1780) not *Maianthemum* Ludwig 1737 = *Unifolium*. *Styrandra* Raf. Amer. Month. Mag. p. 266, (1818); *Maia*, Salisb. Gen. Pl. p. 64, (1866); *Bifolium* Gaertner, Mag. and Scherb. Fl. Wetterau 1, p. 209, (1799). *Sciophylla* Heller, Fl. Wirceb. p. 158, (1810), *Sciophylla* Wibel Pr. Fl. Werth, p. 147, (1799); *Valentinia* Heister Fab. Enum. Fl. Hort. Helm. p. 37, (1763), *Evallaria* Necker, El. 3, p. 189, (1790) in part.

Unifolium canadense (Desf.) Greene, Bull. Torr. Bot. Cl., 15, p. 287, (1898).

Maianthemum canadense Desf. Am. Mus. Paris, 9, p. 54, (1707); *Smilacina bifolia* var *canadensis* A. Gray, Man. ed. 2, p. 467, (1856).

[Lake Co.] (Hill and Blatchley); [Laporte Co.] (Deam); Mineral Springs [Porter Co.] (Deam); Lake Maxinkuckee (Clarke). I have found it in every county except Elkhart. [Porter Co.], U. N. D. Herb. Nos. 937, 9537, 10021, St. Joseph, Mich., 6066; Millers, Ind., 2640; Smith, Ind., [Laporte Co.] 9238; Mishawaka, Ind. 9214.

Subfamily. POLYGONATEAE Benthams, Benth. and Hook. Gen. III., p. 752, (1883).

POLYGONATUM Dioscorides, 4, 6 and of nearly all the pre-Linnaean writers, also Tour. Els. p. 69, (1894); I. R. H. p. 78, (1700); Hill, Br. Herbal. p. 320, (1756); Morandi, Hist. Bot. Pract. p. 105, (1761); Zinn. Cat. Pl. Gott. p. 103, (1757); Ludwig-Boehmer l. c. p. 59, (1760); Adanson l. c. p. 541, (1763).

Salomonina Heister, Syst. 5, (1748); Fabricius, Enum. Pl. Hort. Helm. p. 38, (1763); *Campydorum* Salisb. Gen. Pl. p. 64, (1866).

Polygonatum biflorum (Walt.) Ell. Bot. S. Car. and Ga., p. 393, (1817).

Convallaria biflora Walt. Fl. Car. p. 122, (1788). *Salomonina biflora* (Walt.) Britton Man. p. 273, (1901).

Lake Maxinkuckee (Clarke). I have found it throughout the range. U. N. D. Herb. Nos. 834, 11210; N. Liberty, Ind. No. 9227; Birchim, Ind. [Laporte Co.; No. 11035 Lapaz Junction.

Polygonatum commutatum (R. and S.) Dietr. Gartenz. 3, p. 223, (1835.)

Polygonatum giganteum Dietr. l. c. p. 328. *Convallaria commutata* R. and S. Syst. 7, p. 1671, (1830) *Salomonica commutata* (R. and S.) Britton l. c. No. 11212 Notre Dame, also 11213.

Lake Maxinkuckee (Clarke). I have found this plant also throughout the range.

Subfamily CONVALLARIEÆ Dum. Am. Fam.

CONVALLARIA Linn. Syst. (1735); Hort. Cliff. p. 124, (1737); Gen. Pl. p. 96, (1737); p. 146, (1742); p. 148, (1754); Sp. Pl. p. 314, (1753).

*Callionymus*³ Gesner. Hort. Germ. (1561) *Liliago* Vaillant. Fl. Par. p. 70, (1723); p. 116, (1727) not *Liliago* Caesalpinus (1583) = *Anthericum* Sp. nor *Liliago* Cordus (1561) = *Phalangium* sp. *Lilium Convallium* Tour. Els. Bot. p. 68, (1694), I. R. H. p. 77, (7100); Moench. Meth. p. 636, (1794); Morandi, Hist. p. 105, (1761); *Convallium* Ludwig, De Min. Pl. Gen. p. 7, (1737); Kramer, Tent. Bot. p. 3, (1744); *Maianthemum* Ludwig De Min. Pl. et. (1737)

Convallaria majalis Linn. Sp. Pl. 1. c.

Convallaria Lilium Convallium Linn. Pan Suecus. in Am. Acad. II. p. 245, (1748). *Lilium Convallium majalis* Moench. l. c. *Lilium Convallium album* Morandi l. c.

The reason for referring to this usually only cultivated plant is that a sheet, in U. N. D. Herb. No. 2978 collected by Powers at Notre Dame, notes it as "escaped from cultivation, old Botanical Garden" in 1889. I have not found it in wild state.

Family 33. TRILLIACEÆ De Candolle Ess. Med.
p. 294, (1816).

Parideae Dum. Fl. Belg. St. p. 139, (1827), also Kunth, (1850); Link. Handb. 1, p. 297, (1829); Bartl. Ord. p. 53, (1830) [Div. of *Smilaceae*]: *Melanojæ* Dum. Com. Bot. p. 65, (1823).

MEDEOLA Linn. Syst. (1735); Gen. Pl. p. 107, (1737); p.

³ Beside the fact that *Callionymus* is used and accepted for the name of an animal, Gesner uses it moreover only as a synonym for the appellation *Lilium Convallium* as used for this plant. Both *Convallium* and *Maianthemum* are antedated by *Convallaria*. We see, therefore, no reason to accept *Callionymus*.

154, (1742); p. 158, (1754); Sp. Pl. p. 339, (1753); Gronovius Fl. Virg. p. 39, (1739).

Medeola virginica Linn. l. c.

[Lake Co.] S. Coulter.; Miller's, Ind. (Hill); Edgemoor (Johnson) [Lake Co.]; Berry Lake, Ind. Gibson (Babcock); Lake Maxinkuckee (Clarke); U. N. D. Herb. Nos. 9076, 947, 10100, 702, 947, 2762; Mineral Springs [Porter Co.]. I have found the plant also at Benton Harbor and St. Joseph [Berrien Co.], Mich., Bankson Lake [Van Buren Co.], Mich.; [Marshall Co.]; N. Liberty [St. Joseph Co.]. Specimen number 702 gathered at Mineral Springs in Sept. 22, 1910 shows the lower part of the leaves in the upper whorl when the fruit formed, changing to a deep carmine to purple towards the end of ripening. I noticed this in case of all the plants there at the time.

TRILLIUM Linn., Sp. Pl. p. 339, (1753); Gen. Pl. p. 158, (1754).

Trillium grandiflorum (Michx.) Salisb. Par. Lond. 1 p. (1805).

Trillium rhomboideum var. *grandiflorum* (Michx.) Fl. Bor. Am. 1, 216, (1803).

[Laporte Co.] (Deam). The most common of the group. I have found it in all the counties. U. N. D. Herb. No. 2670½; Sagunay [Laporte Co.] Nos. 417, 9425, 2494, 2525, 6077; Notre Dame; 431, South Bend, Ind; also Nos. 3255, 3256, Notre Dame Ind., collected by Powers. No. 2712 Stephenville, Mich. [Berrien Co.]; Lapaz Junction [Marshall Co.] Nos. 11107, 11012.

Trillium cernuum Linn. Sp. Pl. 339, (1753).

Studebaker's Woods, South Bend, U. N. D. Herb. No. 1843.

Trillium erectum Linn. Sp. Pl. p. 340, (1753). U. N. D. Herb. No. 2670 Sagunay [Laporte Co.]; No. 432 South Bend, Ind. 10162 South Bend; also 11062, 11153.

PHYLLANTHERUM Raf., Jr. de Phys. 89, p. 72.

Esdra Salisb., Gen. Pl. p. 60, (1866).

Phyllanthum sessile (Linn.).

Trillium sessile Linn. l. c.

U. N. D. Herb., Notre Dame, Ind., Nos. 428, 1837, 2550. I have found it also at Lapaz Junction [Marshall Co.] No. 11013; North Liberty and Lakeville [St. Joseph Co.] No. 11015.

Phyllanthum recurvatum (Beck).

Trillium recurvatum Beck, A. Jr. Sci. 2, p. 178, (1826).

More common than the preceding, often growing with it. Lake Maxinkuckee, (Clarke); Nos. 429, 1952, 1893, 814 U. N. D. Herb., Notre Dame, Ind. The last has the parts of the flower in 4's. Nos. 1996, 3254, Notre Dame collected by Powers. No. 7410 Notre Dame collected by W. Johnson. The plant has been found throughout the region and is by far the commonest of all. A plant with the parts in 4's was also collected by me near Lapaz Junction.

Family 34. **SMILACEAE** Ventenat. Tab. Reg. Veg. p. 146, (1799); also R. Brown. Prodr., p. 299, (1810); Dumortier, Com. Bot. p. 67, (1823); Bartling, Ord. Nat. Pl. p. 52, (1830); Lindley, Int. Nat. Syst. p. 277, (1830); Nat. Syst. ed. 2, p. 359, (1836).

NEMEXIA Rafinesque, Neogenyton, p. 3, (1825).

Smilax Linn., Sp. Pl. p. 1028 (in part). *Coprosmanthus* Kunth, Enum. 5, p. 263, (1850).

Nemexia pulverulenta (Michx.) Small, Fl. SE. U. S., p. 281, (1903).

Smilax pulverulenta Michx. Fl. Bor. Am. 2, p. 238, (1803).

Lake Maxinkuckee (Clarke); [Laporte Co.] Deam; [Marshall Co.] (Deam); Nos. 9275, 9710, 1858, 9313, 2987, Notre Dame, Ind. (The last collected by W. Johnson). No. 9345 Birchim, Ind. [Laporte Co.]; No. 11214 Notre Dame.

Nemexia ecirrhata (Engelm.) Small l. c. p. 280.

Smilax echirrhata S. Watson. Gray's Man. Ed. 6, p. 520, (1890). *Coprosmanthus herbaceus* var. *ecirrhatus* Kunth, Enum. 5, p. 266, (1850).

N. D. U. Herb. Nos. 1993, 1854 Notre Dame, Ind. (Powers); No. 9223 Birchim, Ind. [Laporte Co.]; No. 9518 Notre Dame, Ind.

SMILAX Dioscorides 4, 142, Theophrastus, 1, 10; 3, 18; Pliny 16, 35, and of the older authors with scarcely any exception. *Smilax* Tour. Els. Bot. p. 512, (1694); I. R. H. p. 654, (1700); Linn. Syst., (1835); Hort. Cliff. p. 458, (1737); Gen. Pl. p. 305, (1737); p. 428, (1742); p. 455, (1754); Sp. Pl. p. 1028, (1753).

Smilax rotundifolia Linn. Sp. Pl. p. 1030, (1753).

Smilax caduca Linn. l. c. *Smilax quadrangularis* Willd. Sp. Pl. 4, p. 775, (1806).

Lake Maxinkuckee (Clarke); [Laporte Co.] (Deam); Michigan City [Laporte Co.]; [Lake, Berrien, Van Buren, Porter Co.s]. Lakeville, Ind. [St. Joseph Co.]; U. N. D. Herb. No. 9126; Notre Dame, Ind. Nos. 897, 11215.

Smilax hispida Muhl. Torr. Fl. N. Y. 2, p. 302, (1843).

Lake Maxinkuckee (Clarke). Edgemoor, Johnson. I have found it in all the counties.

Smilax glauca Walt. Fl. Car. p. 245, (1788).

Smilax spinulosa J. E. Smith, Torr. Fl. N. Y. 2, p. 303, (1843).

Whiting (Hermann Jaeger) acc. to Cat. of Higley and Raddin.

Family 35. **HYPOXIDEAE** R. Brown. Fl. Voy. p. 277, (1814); also Vermischte. ed. Nees. (1825). Dumortier, Am. Fam. p. 58, (1839) Bartling, Ord. Nat. p. 42, (1830).

HYPOXIS Linn., Systeman, Ed. 10, 2. p. 986, (1759).

Hypoxis hirsuta (Linn.) Coville, Mem. Torr. Cl. 5, p. 118, (1894).

Hypoxis erecta Linn. ed. 10 l. c. *Ornithogalum hirsutum* Linn., Sp. Pl. p. 306, (1753). I have found this plant in Laporte and Berrien counties. No. 3202 Notre Dame (Powers).

Order 13. ENSATAE.

Bartling Nat. Ord. p. 40, (1830).

Family 35. **DIOSCORINEAE** Dumortier, Com. Bot. p. 66, *Dioscorideae* Dum. An. Fam. Pl. p. 59, (1829); *Dioscoreae* R. Brown, Prod. 294, (1810); Lindley, Nat. Syst. (1830); Agardh, Aphor. p. 169, (1823); Achar. Rich. Novob. El. p. 434, (1828); *Dioscoreaceae* Lindley Nat. Syst. Ed. 2, p. 359, (1836).

DIOSCOREA Plumier, Nov. Pl. Am. Gen. p. 9, (1703). *Ricophora* Plukenett. Almag. p. 321, (1696); also P. Miller, Gard. Dict. Ed. 6, p. 175, App. (1750); *Dioscorea* Linn., Hort. Cliff. p. 459,); Gen. Pl. p. 306, (1737); p. 478, (1742); p. 456, (1754); Sp. Pl. p. 1032, (1753).

Dioscorea paniculata Michx., Fl. Bor. Am. 2, p. 238, (1803).

Dioscorea villosa Linn. l. c. (?) *Dioscorea villosa* of the American authors in part.

Lake Maxinkuckee (Clarke); Berry Lake, Millers. Higley

and Raddin. I have found it in all the counties. Nos. 9348, 1959, U. N. D. Herb., Notre Dame, Ind.

Family 36. **IRIDEAE** Ventenat, Tab. Reg. Veg. p. 188.

Iridaceae Lindley, Nat. Syst., ed. 2, p. 382, (1836).

IRIS Theophrastus, 9.7, Dioscorides, 1.11, 4.32, Pliny and nearly all pre-Linnaean writers⁴.

Iris Tour. Bot., p. 291, (1694); I. R. H. p. 358, also including *Xiphion* and *Sisyrinchium* of the same author.

Iris versicolor Linn., Sp. Pl. p. 38, (1753).

Iris virginica Linn.l. c.

Lake Maxinkuckee (Clarke). Found throughout the region. U. N. D. Herb. No. 3228, Notre Dame, Ind., (Powers); No. 2664, Notre Dame; 544 Chain Lakes. No. 2681 a first thought to be only an albino⁵ showed on more careful examination other more notable differences, some of these, however, already referred to. The flowering peduncle is scarcely half as thick as the ordinary plants. The leaves much narrower, and very long, averaging nearly twice those of other plants. The joint of the leaf on the flowering stalk is not swollen. The involucral bracts become narrowed gradually upwards instead of being broadest in the middle; they are long attenuate. The flower beside being perfectly white, without the characteristic purple or violet lines that albinos of blue flowers usually exhibit, is only a little more than one half as large. The stigma about one half as large. The habit of the plant too is strikingly different being as tall, but strict. The root leaves withered are even correspondingly more narrow, and very short. Root-stock thin. The plant seems a good variety which we may call *Iris versicolor* var. **blandescens** Nwd. nov. var.

BERMUDIANA Tour. Els. Bot. p. 306, (1694); I. R. H. p. 387, (1700); Dillenius. Hort. Eltham. p. 48, (1732); also *Bermudiana* Linn., Syst. (1735); *SISYRINCHIUM* Linn., Gen. P. p. 273, (1737); p. 436, (1742); p. 409, (1754); Sp. Pl. p. 954, (1753), not *Sisyrinchium* Tour, and of the older authors = *Iris*; *Bermudiana* Adans. Fam. II., p. 60, (1763).

Bermudiana angustifolia (Mill.)

⁴ Name of some species also written *Xyris*, e. g. Pliny 21:22.

⁵ Am. Mid. Nat. Vol. II., p. 266.

Sisyrinchium angustifolium Miller. Gard. Dict. ed. 7, (1759).

Lake Maxinkuckee, (Clarke). Nos. 11055 South Bend; 11117, Notre Dame, Ind. (Not common).

Bermudiana campestris (Bicknell).

Sisyrinchium campestre Bicknell. Brittons Fl. N. States and Canada, p. 286, (1901).

U. N. D. Herb. No. 11033 South Bend, Ind.; Nos. 3231, 590, 2062, 11084 Notre Dame, Ind.; No. 9697 Dune Park [Lake Co.]; No. 11006 Lydick [St. Joseph Co.]; No. 11016 Chain Lakes [St. Joseph Co.]; Nos. 11020, 11041 Webster's Crossing, N. of Notre Dame, Ind.; No. 479 Big Four R. R. near Edwardsburg, Mich. [Berrien Co. (Rather common.)

Bermudiana graminea (Curtis).

Sisyrinchium gramineum de Lamarck, Encyc. 1, 458, (1787); Curtis Bot. Mag. t. 464, (1799).

Sisyrinchium graminoides Bicknell in Britton's Fl. 1. c.

U. N. D. Herb. No. 9748½, Dune Park, Ind. [Lake Co.]; No. 495 Edwardsburg, Mich. [Berrien Co.]; Nos. 2719, 2729, 2711 Stephenville, Mich. [Berrien Co.]; Nos. 2760, 498 (2), 597, Notre Dame, Ind.; Michigan City [Laporte Co.], (C. D. Mell.); Millers and Pine, Ind. [Lake Co.] (Umbach); Edgemoor Johnson.

Bermudiana apiculata (Bicknell).

Sisyrinchium apiculatum Bicknell, l. c.

No. 26, 4201, 11200 (3), 11201, Websters Crossing, N. of Notre Dame, also 26a with white flowers; No. 3232 Notre Dame, Ind.; Nos. 51, 9189 near Granger, Ind. [St. Joseph Co.] on the Elkhart Co. boundary. The specimens in our region have also decidedly pyrform capsules, some at times ovoid instead of subglobose. The spathes are longer at times almost equalling the flowers.

Bermudiana apiculata var. **mesochora** Nwd. nov. var.

SISYRINCHIUM APICULATUM var. *MESOCHORUM* Nwd.

Type No. 11202 (2) U. N. D. Herbarium, collected at Webster's Crossing, north of Notre Dame, Ind. Resembling the preceding but a smaller plant, 13 cm. 38 cm. Stems 1.5-2 mm. wide about twice as long as the leaves. Flowers dark violet drying purplish. Spathes long acuminate Capsules subglobose 4-6 mm. long.

Order 14. SYNANDRAE.

Agardh. Aphor. p. 179, (1823).

Orchidales Britton Manual p. 288, (1901).

Family 36. ORCHIDEAE Haller, Enum. St. Helvet. 1, p. 262, (1742). Prag. 33. Linnaeus, Phil. Bot. p. 27, (1751); Haller Cat. Pl. Gott. p. 61, (1753); R. Brown, Prod. 309, (1810).
Orchidaceae Lindley. Nat. Syst. ed. 2, p. 336, (1836).

Subfamily CYPRIPEIDIEAE Lindley Orchid., Sal. p. 7-18, (1826).
 ex Dum. An. Fam. Pl. p. 57, (1829); Fl. Belg. (1827).

CALCEOLUS (Rivinus)⁶ Tournefort, Els. Bot. p. 345, (1694); also I. R. R. p. 436, (1700); *Calceolus* Zinn. Cat. p. 85, (1757); Adanson, Fam. II., p. 70, (1763); *Calceolaria* Heister, Syst. p. 5, (1748); CYPRIPEDIUM Linn., Syst. (1735); Gen. Pl. p. 272, (1737); p. 435, (1742); p. 408, (1754); Sp. Pl. p. 951, (1753).

Calceolus Reginae (Walt.).

CYPRIPEDIUM REGINAE Walt. Fl. Car. p. 222, (1788).

Cypripedium album Ait., Hort. Kew. 3; 303, (1789); *Cypripedium spectabile* Salisb., Trans. Linn. soo. p. 78, (1791).

[Lake and Porter Co.'s] (Bradner); [Marshall Co.] (Hessler); Calumet, Ind. (Higley and Raddin); Pine, Ind. (Bastin). Flowers with regular perianth. U. N. D. Herb. No. 2772, near Woodland on Turkey Creek road (St. Joseph Co.); Nos. 3304, 2330 near Bankson Lake [Van Buren Co.]; No. 891, Mineral Springs [Porter Co.].

Calceolus candidus (Willd.).

CYPRIPEDIUM CANDIDUM Willd. Sp. Pl. 4, p. 142, (1805).

Pine, Ind. (Umbach); U. N. D. Herb. No. 10115 (2), Mineral

⁶ The *Calceolus Mariae* of some of the older authors meaning *Cypripedium Calceolus* Linn. may have been used as a generico-specific binary name, e. g. Dodonaeus, 2:1:22; (1588); Lobelius Obs. p. 161, (1576). Hence the genus is referred to Tournefort. The name *Calceolus Mariae* Mary's Slipper, Our Lady's Slipper was changed by Linnaeus to *Cypripedium*, meaning Venus' Slipper. By another unfortunate circumstance the segregate *Fissipes* Small, means cloven foot. It is scarcely possible that the genus were dedicated to his satanic majesty, but rather named because the flower of the plant has the inflated sac like petal cleft in front. The name, however, might certainly with more advertance to previous circumstances have been better chosen.

Springs. Arbor-Vitae-Tamarack bog in the dune region, growing with the preceding and the Stemless Lady's Slipper. Nos. 1948, 2033, 3203, collected near St. Joseph's Lake, Notre Dame; the former by Kiesgen the others by Powers. I have seen the plant in great abundance around the lakes at Notre Dame. The plants have disappeared since then due to the fact that when the lakes were dredged the marl was thrown upon them. Very common on the Grand Trunk R. R. between South Bend and Crumstown.

***Calceolus hirsutus* (Miller).**

Cypripedium hirsutum P. Miller, Gard. Dict. Ed. 8, No. 3, (1763); *Cypripedium pubescens* Willd. Sp. Pl. 4, p. 143, (1803). Clarke, Ind. (Umbach). Notre Dame, Ind.

***Calceolus parviflorus* (Salisb.).**

Cypripedium parviflorum Salisb. Trans. Linn. Soc. 1, p. 77, (1791).

[Lake Co.] Blatchley; Notre Dame, Ind. No. 2032 (Powers). The plant is now becoming scarce, though in certain years it reappears in meagre abundance around the University.

***FISSIPES* Small. Fl. SE. U. S. p. , (1903).**

Cypripedium Ait. Hort. Kew. 3, p. 303, (1789) in part.

***Fissipes acaulis* (Ait.) Small l. c.**

Cypripedium acaule Ait. l. c.

U. N. D. Herb. No. 754, Sagunay [Laporte Co.]; No. 2772, Tamarack swamps on Turkey Creek Road [St. Joseph Co.]; No. 10109, Mineral Springs [Porter Co.].

Subfamily OPHRYDEAE Lindley, Orchid. Seel. p. 96, [(1826).

GALEARIS Raf., Fl. Tell. pt. 2, p. 39, (1836), not *Galearia* Heister, nor *Galearia* Presl. Symb. Bot. 1, p. 49, (1830); *Galeorchis*⁷

⁷ The name *Galeorchis* is a hybrid etymologically composed of the Greek *orchis*, and Latin *galea*. *Cranorchis* would have been more correct and according to usage of good grammar. There should be some law, if it is worth while making nomenclatorial laws for congresses which condemns unfit names. The sanction thereof ought so to work as to render names invalid *post factum*. We prefer the older name *Galearis* in spite of its close relationship to *Galearia* in derivation not sound, and sound is in fact the thing that makes a name different; for the name is the spoken word and not a twist in spelling. *Wuffia*, *Wolfia*, and *Wollfia* are nearer alike than the two words in question of four and five syllables, *Galearis* and *Galearia*.

Rydb. Britton's Man. Fl. N. St. p. 292, (1901).

Orchis Linn., Sp. Pl. p. 939, (1753) segregate.

Galearis spectabilis Raf. l. c.

Galeorchis spectabilis (Linn.) Rydberg l. c.

Orchis spectabilis Linn. p. 743, l. c.

U. N. D. Herb. No. 2484, South of Mishawaka, Ind. [St. Joseph Co.]; collected also by me at Munich, Mich. [Berrien Co.]. Very rare!

LYSIAS Salisb., Trans. Hort. Soc. 1; p. 228, (1812).

Habenaria Willdenow, Sp. Pl. 4, p. 44, (1895; *Platanthera* Richard. Mem. Mus. Paris 4, p. 481, (1818).

Lysias hookeriana (A. Gray), Rydb. Britton's Man. p. 294, (1905).

Habenaria hookeriana A. Gray Ann. Lyc. N. Y. 3, p. 229, (1836); *Habenaria Hookeri* var. *oblongifolia* Paine, Cat. Pl. Oneida, p. 83, (1865); *Habenaria orbiculata* Goldie. Edinb. Phil. Jr. 6, p. 331, (1822); not *H. orbiculata* Pursh. Fl. Am. Sept. p. 588, (1814).

[Lake Co.] (Hill); Millers, (Babcock) Edgemoor, (Hill).

LIMNORCHIS Rydberg. Mem. N. Y. Bot. Gard. 1, o. 105, (1900).

Habenaria Willd. l. c. segregate.

Limnorchis hyperborea Rydb. l. c.

Habenaria hyperborea (Linn.) R. Br. Ait. Hort. Kew. ed. 2:5, p. 193, (1813); *Orchis hyperborea* Linn. Mant. p. 121, (1767).

Miller's (Umbach); [Porter Co.] S. Coulter, Pine (Hill); Sagunay [Laporte Co.], No. 9514. No. 39 U. N. D. Herb.; Big Four Railroad, Granger, Ind. [St. Joseph Co.]; No. 9362, Notre Dame, Ind.

Limnorchis dilatata (Pursh.) Rydb. l. c.

Habenaria dilatata (Pursh.) Hooker, Exot. Fl. 2, p. 95, (1825)

Orchis dilatata Pursh. Fl. Am. Sept. p. 588, (1814).

Millers (Umbach).

BLEPHARIGLOTTIS Raf. Fl. Tell. II, p. 38, (1836).

Habenaria Willd., l. c. segregate.

Blephariglottis ciliaris (Linn.) Rydb. Britton's Man. Fl. N. S. p. 296, (1901).

Habenaria ciliaris (Linn.) R. Br. l. c. p. 194; *Orchis ciliaris* Linn., Sp. Pl. p. 939, (1753).

Millers (Umbach); [St. Joseph Co.] (Barnes); Lake Maxinkuckee (Clarke).

Blephariglottis lacera (Michx.) Rydb. l. c.

Habenaria lacera (Michx.) R. Br. Prod. Fl. Nov. Hall. 1, p. 312, (1810); *Orchis lacera* (Michx.) Fl. Bor. Am. 2, p. 156, (1803).

Casella, (Higley and Raddin); Calumet (Babcock); Millers (Hill, Bastin); Normal (Brennan); Lake Maxinkuckee (Clarke); No. 9515 U. N. D. Herb. Sagunay [Laporte Co.]; No. 2695, Lake at Studebaker's Woods [St. Joseph Co.]; No. 40, Big Four Railroad between Granger and Elkhart [Elkhart Co.].

Blephariglottis leucophaea (Nutt.) Rydb. l. c.

Habenaria leucophaea Nutt. A. Gray Man. Ed. 5, p. 502, (1867); *Orchis leucophaea* Nutt. Trans. Am. Phil. Soc. II., 5, p. 161, (1833-37

Lake Maxinkuckee (Clarke); Bankson Lake, Mich. [Van Buren Co.]; No. 11203 U. N. D. Herb.

Blephariglottis alba (Michx.).

Blephariglottis blephariglottis (Michx.) Rydb., l. c.

Habenaria blephariglottis Torrey. Comp. 317, (1826); *Orchis ciliaris* var. *alba* Michx. Fl. Bor. Am. 2: p. 157, (1803). Not *Orchis alba* Lam., (1778); *Orchis blephariglottis* Willd. Sp. Pl., 4: p. 9, (1805); *Habenaria ciliaris* var. *alba* Morong. Bull. Torr. Club, 20, p. 38, (1893).

Lake Maxinkuckee (Clarke).

Blephariglottis psycodes (Linn.) Rydb. l. c.

Habenaria psycodes (Linn.) A. Gray, Am. Jr. Sc. 38, p. 310, (1840); *Orchis psycodes* Linn., Sp. Pl. p. 943, (1753); *Orchis fimbriata* Ait. Hort. Kew. 3, p. 297, (1789).

Millers, Ind. (Hill and Bastin).

GYMNADENIOPSIS Rydb. l. c. p. 293.

Habenaria (Willd.), segregate.

Gymnadeniopsis clavellata (Michx.) Rydb. l. c.

Habenaria clavellata Michx., Fl. Bor. Am. 2, p. 155, (1803); *Orchis tridentata* Willd., Sp. Pl. 4, p. 41, (1805); *Habenaria tridentata* Willd. Hook. Exot. Fl. 2, pl. 81, (1825).

U. N. D. Herb. No. 9363, Notre Dame, Ind.; L[ake Co.]

(Hill); Millers, (Umbach, Higley and Raddin); Pine (Bastin); [Lake Co.] Calumet, (Babcock); Sheffield (Hill);.

COELOGLOSSUM Hartmann, Handb. Skand. Fl. ed. 1, p. 329, (1820).

Habenaria Willd. segregate.

Coeloglossum bracteatum (Willd.) Parl. Fl. Ital. III., p. 409.

Habenaria bracteata (Willd.) R. Br. 1. c. p. 192.

[Lake Co.] (Hill); Pine, Ind. (Bastin); Casella and Millers, Ind. (Higley and Raddin); U. N. D. Herb. No. 489 St. Joseph, Mich. [Berrien Co.]; No. 11156 Lapaz Junction [Marshall Co.].

PERULARIA Lindley, Bot. Reg. t. 1701 (1834).

Habenaria Sprengel Syst. 3. p. 688, (1826), segregate.

Perularia flava (Linn.) Rydb. 1. c. p. 292.

Orchis flava Linn., Sp. Pl. p. 942, (1753); *Orchis virescens* Willd., Sp. Pl. 4, p. 37, (1805); *Habenaria virescens* Spreng. Syst. 1. c.; *Habenaria flava* A. Gray, Am. Jr. Sc. v. 38, p. 308, (1840).

Lake Maxinkuckee (Clarke); [Lake Co.] (Deam); Berry Lake and Pine (Babcock); Edgemoor (Hill); Millers (Umbach).

Subfamily NEOTTINAE Pfitz. Entw. Anord. Orch. p. 45, 97, (1887).

POGONIA Juss. Gen. Pl. p. 65, (1789).

Pogonia ophioglossoides (Linn.) Ker. Lindley Bot. Reg. Pl. 148, (1816); *Arethusa ophioglossoides* Linn., Sp. Pl. p. 951, (1753).

[Marshall Co.] (Hessler); [Lake Co.] (Hill); U. N. D. Herb No. 23 [Elkhart Co.] on the Big Four R. R. from Granger to Elkhart; No. 23½ near Granger in St. Joseph Co.; I have found a pale specimen almost white in a tamarack bog at Sagunay [Laporte Co.]. Only one plant was found and was not collected. Very rare!

TRIPHORA Nuttall. Gen. N. Am. 2, o. 192, (1818).

Triphora trianthophora (Sw.) B. S. P. Prel. Cat. N. Y. p. 52, (1888); *Arethusa trianthophora* Sw. Konigl. Vet. Handb. (II.) 21, p. 230, (1800); *Pogonia pendula* Lindl. Bot. Reg. pl. 908, (1825).

[Lake Co.] (S. Coulter); Casella, Ind. (Hill); Millers (Higley and Raddin). I have never found it.

ARETHUSA Gronovius. Fl. Virg. 2, p. 184, (1743)

Arethusa Linn., Sp. Pl. p. 950, (1753); Gen. Pl. p. 407, (1754); *Orchidion* Mitchell, Gen. p. 19, (1748); also (1769).

Arethusa bulbosa Linn. l. c. also Amoen. Acad. 3, p. 14, (1756).
[Lake Co.] (S. Coulter); Pine and Casella, Ind. (Higley and Raddin); Millers (Bastin and Hill).

TRIORCHIS Bauhin, Phytopinax p. 123, (1596); Gerard, Herbal (1597); *Triorchis* C. Bauhin, Pinax p. 84, (1623); Ray, (1688), (?); also Tabernaemontanus.

TRIORCHIS Petiver, Opera. Hist. Nat. Spect. Vol. II., ed. John Millan (1764!), Gazophylacium tab. 68, 7.

Orchiastrum Micheli, Nov. Pl. Gen. p. 30, t. 26, (1729); *Gyrostachys* Pers. Syn. II., p. 511, (1807); *Ibidium* Salisb., Trans. Hort. Soc. 1, p. 291, (1812); *Spiranthes*⁸ L. C. Richard, Mem. Mus. Paris 4, p. 42, (1818).

***Triorchis plantaginea* (Raf.).⁹**

Neottia plantaginea Raf. Am. Monthly Mag. 2, p. 206, (1818); *Spiranthes plantaginea* (Raf.) Torrey. Fl. N. Y. 2, p. 284, (1843); *Gyrostachys plantaginea* (Raf.) Britton. Ill. Fl. 1, p. 470, (1896); *Ibidium plantagineum* (Raf.) House, Bull. Torr. Bot. Cl. p. 381, (1905); *Gyrostachys latifolia* (Torr.) Kuntze. Rev. Gen. Pl. p. 664, (1891). *Spiranthes latifolia* Torr. Lindley Gen. and Sp. Orch. p. 467, (1840); *Spiranthes lucida* (H. H. Eaton) Ames. Man. Rob. and Fernald. p. 314, (1908); *Neottia lucida* H. H. Eaton Descrip. Pl. Troy (1832).

Notre Dame, Ind., N. D. U. Herb. No. 11204; Chain Lakes [St. Joseph Co.] Nos. 533, 2483.

***Triorchis cernua* (Linn.).**

Ophrys cernua Linn. Sp. Pl. p. 946, (1753); *Gyrostachys cernua* (Linn.) Kuntze, Rev. Gen. Pl. p. 604, (1891); *Spiranthes cernua* L. C. Rich., Orch. Am. p. 37, (1891).

[Lake Co.] (S. Coulter); Lake Maxinkuckee (Clarke); No. 9391 U. N. D. Herb. Notre Dame, Ind.; No. 757 Tamarack, Ind. [Laporte Co.]; No. 2021 Notre Dame collected by Powers.

⁸ For other synonyms see Kew. Ind. and MacMillan, Met. Minn. p. 170, (1890).

⁹ The name *Triorchis* antedates the other names for the genus, and is therefore the oldest name since 1753 as well. The name is first found in Millan's Edition of Petiver's works, published in 1765!

Triorchis gracilis (Bigelow)¹⁰.

Spiranthes gracilis (Bigel) Beck, Bot. p. 343, (1833); *Gyrostachys gracilis* (Bigel) Kuntze, l. c.

Michigan City, Ind. [Laporte Co.] (C. D. Mell); [Lake Co.] (S. Coulter).

PERAMIUM Salisb., Trans. Hort. Soc. 1, p. 301, (1812).

Goodyera R. Br. Ait. Hort. Kew. Ed. 2, 5, p. 197, (1813); *Epipachis* Haller Helv. p. 277, (1742); ex Ludwig-Boehmer p. 357, (1760); not *Epipactis* Zinn = *Serapias*, *Orchis* nor *Epipactis* of the ancients.

Subfamily LIPARIDIDAE Lindley. Veg. King. p. 181, (1847).

Peramium pubescens (Willd.) MacM. Met. Minn. p. 171, (1892).

Neottia pubescens Willd. Sp. Pl.⁴ p. 76, (1805); *Goodyera pubescens* R. Br. l. c.

Whiting, Ind. (Hill); [Lake Co.] (Hill); Stephenville, Mich. [Berrien Co.]; No. 2770 U. N. D. Herb.

PSEUDORCHIS J. Ray. Syn. p. 387, (1690), also *Morison*, an. *Pseudo Orchis* Dodonaeus (?)

PSEUDORCHIS S. F. Gray Nat. Arr. Br. Pl. 2, p. 213, (1821).

Liparis Rich. Mem. Mus. Paris 4, p. 43, (1818) segregate; *Leptorchis* Thouars, Nouv. Bull. Soc. Philom. p. 314, (1808), segregate. *Paliris* Dum. Fl. Belg. Stam. p. 134, (1827); *Sturmia* Reichenb. in Moessler. Handb. ed. 2, II., p. 1576, (1828).

Pseudorchis Loeselii (Linn.) S. F. Gray l. c.

Paliris Loeselii (Linn.) Dum. l. c.; *Leptorchis Loeselii* (Linn.) MacM. l. c. p. 173, (1892); *Ophrys Loeselii* (Linn.) p. 947, (1753); *Liparis Loeselii* (Linn.) Rich. Lindley Bot. Reg. pl. 882, (1825)

Clarke, Ind. [Lake Co.] (Umbach); [Lake Co.] (Hill); Lake Maxinkuckee (Clarke); Millers (Higley and Raddin); S. Chicago, Casella (Hill); Pine (Bastin); U. N. D. Herb. No. 3327; Rum Village S. of South Bend, Ind.

LEPTORCHIS Thouars l. c.

Liparis L. C. Rich. l. c.

¹⁰ Some other members of the genus that may be transferred under the genus name TRIORCHIS, from other parts of the country are:

T. stricta (Rydb.), *T. ochroleuca* (Rydb.), *T. odorata* (Nutt.), *T. praecox* (Walt.), *T. linearis* (Rydb.), *T. Grayi* (Ames.), *T. romanzoffiana* (Cham.), *T. ovalis* (Lindl.).

Leptorchis liliifolia (Linn.) Kuntze, Rev. Gen. Pl. p. 671, (1891).

Ophrys liliifolia Linn. Sp. Pl. p. 946, (1752); *Liparis liliifolia* L. C. Rich. l. c.

Lake Maxinkuckee (Clarke).

CORALLORHIZA Ruppius, Fl. Jen. (1718); R. Br. Ait. Hort. Kew. ed. 2, 5, p. 209' (1813); Gmelin, Fl. Sib. 1, op. 25, (1747); Haller. Hist. Stirp. Indig. Helv. II. p. 159, (1768); also p. 248, (1742); *Rhizocorallon* Hall. in Rupp. Fl. Jen. ed. 3, p. 301, (1745); *Coralliorhiza* Aschers. Fl. Prov. Brand. 1, p. 697, (1864).

Corallorhiza odontorhiza (Willd.) Nutt. Gen. 2, p. 197, (1818).

Cymbidium odontorhiza Willd. Sp. Pl. 4, p. 110, (1805).

Lake Maxinkuckee (Clarke).

Corallorhiza trifida Chat.

Corallorhiza Corallorhiza (Linn.) Karst. Deutsch. Fl. p. 448, (1880-1885); *Corallorhiza innata* R. Br. l. c. 5, p. 209, (1813); *Ophrys Corallorhiza* Linn. Sp. Pl. p. 945, (1753).

Berry Lake, (Hill).

CATHEA Salisb., Trans. Hort. Soc. 1, p. 300, (1812).

Helleborine Martyn, Hist. Pl. t. 50, (1736), not *Helleborine* Dodonaeus, Matthioli, etc. *Limodorum* Gronovius. Fl. Virg. p. 110, (1739), Linn. Sp. Pl. p. 950, (1753), not *Limodorum* Clusius Hist. Rev. Stirp. p. 240, (1583), nor Tour. I. R. H. p. 437, (1700); nor Els. Bot. p. 345, (1694), nor *Limodorum* Dodonaeus, Pempt. p. 552, (1583) = *Orobanche*. *Limodorum* Linn. Gen. Pl. p. 435, (1742); p. 407, (1754); also Royen Fl. Leyd. p. 16, (1740).

Subfamily THUNIINAE Pfitz l. c. pp. 149 and 100

Cathea tuberosa (Linn.) MacM. Met. Minn. p. 175, (1893).

Limodorum tuberosam Linn. l. c.; *Calopogon pulchellus* R. Br. l. c.; *Calopogon tuberosus* B. S. P. Cat. N. Y., (1898); *Helleborine tuberosa* (Linn.) Kuntz l. c. II., p. 665 (1891); *Cathea pulchella* (Sw.) Salisb. l. c.; *Cymbidium pulchellum* Willd. Sp. Pl. 4, p. 105. (1805); also Sw. Nov. Act. Soc. Sc. Upsal. VI. (1799).

Pine, Ind. (Umbach); [Lake Co.] (Hill); [St. Joseph Co.] (Barnes); Lake Maxinkuckee (Clarke); U. N. D. Herb. Nos. 3324, 9505, 2330 (2). Near Lawton, Mich. [Van Buren Co.]; Nos. 9154, 9022, 882. Chain Lakes [St. Joseph Co.]; No. 2745 Sagunay [Laporte Co.]; No. 7706 Dune Park, Ind. [Lake Co.]; No. 22

Big Four Railroad, Granger to Elkhart [Elkhart Co.]; also in St. Joseph Co. near Granger, growing with *Pogonia ophioglossoides* (Linn.) Ker.

Subfamily SOBRALIINAE Pfitz l. c. p. 99.

APLECTRUM Nutt. Gen. 2, p. 197, (1818).

Aplectra Raf. Cat. 13, (1824); *Amplectrum* Hooker, Fl. Bor. Am. 2, p. 197, (1840).

Aplectrum spicatum (Walt.) B. S. P. Prel. Cat. N. Y., 5, (1888); *Aplectra elatior* Raf. l. c. *Arethusa spicata* Walt. Carol p. 222, (1788); *Cymbidium hyemale* Willd. Sp. Pl. 4, p. 107, (1805);

Berry Lake (Higley and Raddin); Y. N. D. Herb. No. 9364 Rum Village, S. of South Bend; also 10569 (2), and No. 11205 from the same place. Not very scarce yet. Found also at Munich, Mich.

[To be Continued.]

Migration of Our Birds in the Autumn of 1912.

BY BROTHER ALPHONSUS, C. S. C.

In August the dates of migration of the Scarlet Tanager, Yellow Warbler, Red-eyed Vireo, and possibly the Hummingbird, Barn Swallow, Loggerhead Shrike and Orchard Oriole are likely not the actual time of leaving for these species. The dates given are those days when the writer last had an opportunity of visiting places where these species are commonly found.

Other species that were not seen in August were: Bobolink, Dickcissel, Rose-breasted Grosbeak, Yellow-throated Vireo, Maryland Yellowthroat, Alder Flycatcher, Phoebe, Tree Swallow, Long-billed March Wren and Bittern. Some of these species were not observed because the writer was unable to go to a favorable locality where the birds are usually found; in the case of the Dickcissel no record of the species was made during the year; the Rose-breasted Grosbeak migrated in spring and the Bobolink early in summer.

The date of migration for the Kingbird is the earliest I have yet recorded, being 10 or 11 days sooner than any previous records.

The last day I saw the species, a number of birds were bathing in a lake late in the afternoon. Was this bathing preparatory for a night flight? I can not say what determined the birds to leave so many days ahead of their usual time for migrating. In fact the more observations I make on the migration of birds, the clearer it becomes to me that it is quite beyond our efforts to give a satisfactory reason for the differences noted in the time of migration of most species.

A species that is sure to leave in autumn within one or two days of a certain date is the Baltimore Oriole. This regularity is quite exceptional, for I can not find another species that shows such nearness in its dates of migration. As in the cases of disparity in the dates of migration so in this instance of regularity, I can not say what was the determining cause of the birds' movements.

A number of species were recorded but once in certain months, this date being selected as the one before the day of migrating. Such records were made of the Redstart, Crested Flycatcher and Vesper Sparrow in September; House Wren, Flicker, Sapsucker, Yellow Palm Warbler, Hermit Thrush, Sparrow Hawk, Greater Yellowlegs and Red-breasted Nuthatch in October; Bluebird, Purple Grackle, Cardinal, Canada Goose and Hairy Woodpecker in November; Northern Shrike in December. The fact that these species were seen but once would seem to indicate that the individuals were migrating birds. There is some probability that on certain days the writer may have missed a number of these species, and thus failed to obtain the true dates of their migration.

The writer wishes to call attention to the only record he made of the Hermit Thrush this autumn—October 13. In two previous years, this species appeared late in August, making the date of arrival this year 44 days later than the earliest arrival on August 29, 1910. Who can furnish a clue to this case of remarkable disparity in dates of migration?

AUGUST.

2 Scarlet Tanager	19 Barn Swallow
5 Spotted Sandpiper	20 Orchard Oriole
6 Yellow Warbler	22 Kingbird
6 Red-eyed Vireo	29 Bobwhite
12 Loggerhead Shrike	31 Wilson Warbler
14 Hummingbird	31 Cedarbird

SEPTEMBER.

3 Crested Flycatcher	18 Wood Pewee
4 Chipping Sparrow	20 Whip-poor-will
4 Red-breasted Nuthatch arrived	20 Redstart
5 Baltimore Oriole	22 Indigo Bird
5 Purple Martin	23 Mourning Dove
9 Red-headed Woodpecker	25 Phoebe arrived
11 Herring Gull arrived	25 Yellow-billed Cuckoo
13 Brown Thrasher	26 White-throated Sparrow ar- rived
13 Warbling Vireo	28 Golden-crowned Kinglet ar- rived
14 Pine Warbler	28 Snowbird arrived
17 Black-throated Green Warbler	29 Chimney Swift
18 Catbird	30 Vesper Sparrow
30 Myrtle Warbler arrived	

OCTOBER.

3 Sapsucker	19 Sparrow Hawk
4 Phoebe	21 Killdeer
8 House Wren	25 Tree Sparrow arrived
11 Cowbird	25 Chickadee arrived
12 Yellow Palm Warbler	25 Greater Yellowlegs
13 Hermit Thrush	25 White-throated Sparrow
15 Meadowlark	26 Red-breasted Nuthatch
15 Flicker	27 Robin
16 Field Sparrow	27 Kingfisher
16 Hell Diver	27 Myrtle Warbler

NOVEMBER.

1 Red-winged Blackbird	13 Cardinal
8 Bluebird	18 Canada Goose
8 Golden-crowned Kinglet	19 Goldfinch
8 Purple Grackle	22 Hairy Woodpecker
25 Northern Shrike arrived	

DECEMBER.

1 Herring Gull	8 Northern Shrike
6 Tree Sparrow	15 Song Sparrow
	14 Chickadee
Total number of migrants seen, 64.	

An Older Name for *Listera*.

BY J. A. NIEUWLAND.

Apart from the fact that the name *Listera* R. Brown,¹ was preceded by an older name *Listeria* Necker,² it is not even the oldest for the orchidaceous genus, whether we hold to absolute historical priority as a principle of or chose 1753 as a starting point. Of course Necker's name and Brown's name seem practically the same and named in honor of the same scientist. This is evident from the fact that *Listera* R. Br. was changed by Sprengel to *Listeria*.³

In 1764 an edition of Petiver's works was made by John Millan.⁴ The old name **Bifolium** which these plants had since the time of Lobelius,⁵ Ray,⁶ Morison,⁷ Dodonaeus,⁸ Parkinson,⁹ Chabraeus,¹⁰ etc., is given to them, thus antedating any even since 1753. I shall only transfer the most well known of the genus:

Bifolium (Lobelius) Petiver-Millan, Opera, tab. 70, Nos. 10, 11, 12.

Listera R. Brown (1813) l. c. not *Listeria* Necker, (1790) l. c.

Diphryllum Raf. Med. Rep. N. Y. 5, 357, (1808) (?).

Distomaea Spenn., Fl. Frib. 1, 245, (1825); *Pollinirhiza* Dulac. Fl. Pyr. p. 120, (1867).

¹ Brown R., in Ait. Hort. Kew. ed. 2, 5, p. 201, (1813).

² Necker, J. de, Elem. 1, p. 206, (1790).

³ Sprengel, C. Anleitung, II., 1, p. 293, (1817).

⁴ Petiver, J. Opera ad Hist. Nat. Spectantia. (N. B.) "About 100 of these plates were never published before." London. Printed for John Millan near Whitehall MDCCCLXIV.

⁵ Lobelius, M. Observationes p. 161, (1576); Adv. p. 127.

⁶ Ray. J. Methodus Plantarum Nova, p. 157, (1682).

" Synopsis p. 375.

" Historia Plantarum p. 1232, (1686).

⁷ Morison R. Oxon. II., p. 489, (1715). Tab. II. Sect. 12.

⁸ Dodonaeus, R. Pempt. p. 242, (1583).

⁹ Parkinson. J., Theatrum p. 504, (1644).

¹⁰ Chabraeus, D., Sciagraphia, p. 506, (1677).

¹¹ "*Ophris*," Tournefort, Els. Bot. p. 346, (1694); I. R. H. p. 436, (1700), in stricto sensu.

¹² If this name be invalidated because of the existence of *Bifolium cordatum* Gaertner, 1790, I suggest the restoration of Ray's *B. minimum*.

Bifolium cordatum (Linn.) Nwd.*Listera cordata*. (Linn.) R. Br. l. c.*Distomaea cordata* (Linn.) Spenn. l. c.*Pollinirhiza cordata* (Linn.) Dulac. l. c.*Ophrys cordata* Linn. Spl Pl. p. 946, (1753).*Bifolium minimum* Ray. Syn. p. 385, (1724); also Petiver-Millan, Opera l. c. (1764).**Bifolium ovatum** (Linn.) Nwd.*Listera ovata* (Linn.) R. Br. l. c. *Distomaea ovata* (Linn.) Spenn. l. c. *Pollinirhiza ovata* (Linn.) Dulac, l. c. p. 121. *Ophrys ovata* (Linn.) Sp. Pl. p. 946, (1753). *Bifolium majus* Ray. l. c. also Petiver-Millan l. c.**Bifolium convallarioides** (Sw.) Nwd.*Listera convallarioides* (Sw.) Torr. Comp. p. 220, (1826).**Bifolium australe** (Lindl.) Nwd.*Listera australis* Lindley. Gen. Sp. Orch. 456, (1840).**Bifolium Smallii** (Wiegand) Nwd.*Listera Smallii* Wiegand. *Listera reniformis* Small.**Bifolium auriculatum** (Wiegand) Nwd.*Listera auriculatum* Wiegand.

New Plants from Various Places.—II.

BY J. A. NIEUWLAND.

Dasiphora fruticosa var. **appendiculata** Nwd., nov. var.

Plant stouter than the type with the same hirsute or silky hirsute petioles, peduncles and twigs, and hirsute stems; leaves silky and hirsute, shining when young; leaflets usually few, the lower lateral inequilateral, the upper with blade running down the rachis to the lower pair, lanceolate, the terminal oblong acute at both ends. 2.2 cm. long, and many nearly 6–7 mm. wide, not notably revolute on the margins. Flowers very numerous and rather densely aggregated. Petals smaller than in the typical plant, less than 5 mm. long, lemon yellow, orbicular. Sepals triangular ovate with a long acuminate point, usually exceeding the petals. Outer bractlets considerably longer than the corolla,

lanceolate herbaceous, *having each two linear herbaceous appendages or teeth at the base one on each side*. Calyx and sepals enlarging considerably in fruit, and decidedly herbaceous.

Planta stricte erecta, floribus dense aggregatis, major quam specie; bracteolae ad basim appendice lineari indutae. Folia majora haud vel vix revoluta.

Although the plant differs most remarkably in habit from the ordinary, and has uniformly appendaged bractlets, together with the other notable characters mentioned, it is scarcely perhaps more than a cultivated variety. The specimen from which the diagnosis was made, was taken from a plant in cultivation, and at that entirely outside of its natural geographical habitat. The specimen is in the U. S. National Herbarium and is no 2943a "in cultivation at Biltmore, North Carolina," gathered "Aug. 6th, 1897."

Dasyphora fruticosa (Linn.) Raf. though in our region growing only in bogs, submits readily to cultivation, and usually bears widely different flowers, becomes taller, more bushy, awith crowded flowers and inflorescence. The bracts of American *Dasiphorae* are not infrequently toothed at the apex, and sometimes an occasional appendage is found at their base. I have not found such basal growths in either cultivated specimens or native grown plants in our region.

I have advisedly refused to use the older name *Pentaphylloides* (Morison) Hill (1756), though there can not be any doubt as to the identity of the plant with Rafinesque's *Dasiphora*, because names ending in *oides* are objectionable, and many writers have avoided such in spite of priority,—this in spite too of the fact that I first called attention to the synonymy of *Dasiphora*.

Limodorum tuberosum var. **nanum** Nwd., nov. var.

Plant small 7.5–13 cm. high, from a small ovoid bulb about 6 mm. long and half as wide; one leaved; leaf 3–6.5 cm. long, (when the plant is in flower) linear lanceolate, acute or acuminate sheathing at the base, scarcely ever 5 mm. wide; base of leaf covered by a single obtuse membranous bract completely sheathing its whole length of about 1 cm.—1.3 cm. Peduncle often having near the middle a minute ovate clasping bract. The successive years' shoots arise from a bulb at the end of short offsets about 7 mm. long. Flowers only 2 or 3, racemose, erect, the sessile ovary subtended by a membranous, ovate, somewhat acuminate

pointed bract clasping at the base, and usually more than half as long as the ovary, the latter ordinarily about 7 mm. long in anthesis. Flowers dark purple, lateral sepals, ovate to obovate and lanceolate, twisted upwards with an acute, acuminate, or abruptly mucronate or aristate apex. Lower sepal narrower slightly carinate towards the base, not over 1.6 cm. long. Petals acute or obtuse at the apex, broader near the base, lanceolate oblong or obspatulate because of an abrupt blunt tooth below the middle. Lip bearded within with a triangular winged apex, slightly retuse, mucronulate or obtuse. Claw linear, column dark purple to black; pollen masses orbicular, dark purple to black without.

Planta perparva 7.5–13 cm. alta cum duobus vel tribus tantum floribus, et folio perparvo lineari 3–6.5 longo et vix 5 mm. lata. Flores purpurei minores quam in specie; pollinia suborbicularia, atra.

Type No. 609580 also 609581 U. S. National Herbarium collected by J. D. Sornburger, Aug. 28, 1903 and Aug. 12, 1903 on the Barred Islands, Coast of Newfoundland. The remarkably small size of the plant shows it at first sight as peculiar. The floral bracts are relatively longer and the flowers smaller. The raceme is always few flowered. Intermediate forms apparently between this and our plants of the United States are met with in Nova Scotia, but the Newfoundland plant has so remarkably different an aspect and so many minor differences that it seems to deserve at least varietal standing.

Persicaria punctata var. **tacubayana** Nwd., nov. var.

Plant glabrous, stem erect or ascending. Leaves oval, ovate to elliptical seldom ovate lanceolate; cuneate at the base, rounded or obtuse at the apex, in the upper undeveloped leaves sometime acutish, or attenuate to a blunt apex, 2.7 x 3 to 4.5 x 6.5 cm. on flowering shoots, light green above minutely but densely cinereous punctulate beneath; margin entire, in younger leaves sparsely and minutely appressed ciliate; petiole .6–1 cm. long slender; ochrea membranous, glabrous, 1–1.6 cm. long without bristly ciliation, often with short excurrent veins in the upper parts of the plant, cylindric sometimes wider at the base. Upper nodes 3–6.5 cm. long. Raceme erect 4–4.5 cm. long, lower flower about 1 cm. distant from the others and separating to about 2.5 cm. in fruit. Flowering peduncle 2.5–3 cm. long elongating in fruit to 5.5–7 cm.

Ochreolae narrowly funnel form, rose-purple at the apex, glabrous, scarcely imbricate even when the flowers are in bud. Pedicels about 5 mm. long slender in flower. Calyx glandular punctate, white above greenish below and attenuate at the base, 2 mm. long in flower and about 3 mm. in fruit, segments ovate to obovate. Stamens 5 included, style 2-cleft to a little below the middle. Fruit trigonous 2 mm. long, black and lustrous.

Planta glabra cum foliis ovalibus, ovatis, vel ellipticis. Folia basi cuneato, apice rotundato, obtuso vel in foliis junioribus, apice acutiusculo, 2.7x4.5 cm. vel 3x6.5 magnitudine. Folia in facie superiore viridia, inferiore quidem cinereo-puncticulata, petiolis .6-1 cm. longis, ochreis membranosis, glabris, haud ciliatis. Nodi 3-6.5 cm. longi. Pedunculus cum floribus 2.5-3 cm. et cum fructu 6.5-7 cm. longus. Ochreolae infundibuliformes roseo colore glabrae minime imbricatae. Pedicelli circa 5 mm. longi. Calix glanduloso-puncticulatus, viridescens, circa 2 mm. longus, ejus partes ovatae vel obovatae. Stamina 5. Stylus infra medium divisus et fructus ater triangularis, 2 mm. longus.

Type of description No. 316887, U. S. National Museum Herbarium, Pringle's No. 6656, labelled *Polygonum acre* collected in Tacubaya Federal District, Mexico, July 26, 1897. The plant differs from *P. punctata* var. *eciliata* Small in the shape of the leaves. The racemes are shorter, and the style not cleft to the base. The leaves are all nearly of uniform size.

Chamaenerion latifolium var. **megalobum** Nwd., nov. var.

Plant rather larger than the type over 3.5 dm.; stem erect or somewhat assurgent, glabrate or sparsely puberulent above. Leaves 2.5-6 cm. or more in length and 7-13 mm. or more wide, glabrous on the surface and minutely and sparsely pubescent below slightly cinereous when young, oblong to oblong-lanceolate, obtuse, cuneate, short petiolate or sessile, sometimes opposite at the middle of the stem or above. Sepals oblong lanceolate downy without. Petals obovate apparently whitish or pale, narrowed to a claw. Peduncle 2.5-5 cm. long in fruit, capsules curved outward in flower by an abrupt twist at the base. Fruiting capsules straight, truncate at the apex and appearing as if somewhat beaked, gradually tapering at the base, very long, often over 10 cm. Coma of the seeds 1.2 cm. long, pods whitish pubescent especially when young.

Planta major quam in specie, 3.5 dm. alta vel altior, erecta vel assurgens, glabrata vel sparse puberulens. Folia 2.5-6 cm longa et 7-13 mm. lata vel latior, glabra vel pubescentia in facie inferiore, juvenilia cinerea, oblonga vel oblonga-lanceolata, obtusa, cuneata, breviter petiolata vel subsessilia. Sepala oblonga-lanceolata. Petala obovata versimiliter albescentia. Pedunculus 2.5-5 m. longus. Fructus truncatus, ad basim attenuatus saepius 19 cm. longus.

Type No. 455 collected by Edw. R. Heacock at an altitude 1500 m. at Cheops Draw, British Columbia in the Selkirk Mountains. The most notable characters are the very large fruits and paler flowers, as also the peculiar habit and size of the plant.

Book Note.

HANDBOOK OF THE WILD AND CULTIVATED FLOWERING PLANTS.

By C. A. Darling, Ph. D. Pocket edition; New York, 1912; pages VIII + 264. Published by the author.¹

This splendid book is one that will appeal to a large class of persons in the eastern and central states. By means of well arranged and carefully worded keys the author places the determination of the common plants of the field and garden within the reach of those who have not had opportunity for advanced botanical training. The omission of technical terms and the use of easily observed gross characters will make the book attractive to many who do not care for the technical manuals.

Presentation in such a way as to bring the matter within the reach of the untrained has not detracted at all from the scientific accuracy of the work. There are four general keys to the genera; (1) Key to the Wild Plants and Cultivated Trees and Shrubs which flower during March, April, and May; (2) Key for June to November; (3) Key to the Wild and Cultivated Trees and Shrubs in Autumn; and (4) Key to the Cultivated Herbs and Potted Shrubs. Following these keys are descriptive keys to the species with both the common and scientific names, arranged and classified in their orders and families. This arrangement makes

¹ The book can be obtained by addressing the author, care Department of Botany, Columbia University, New York City.

the book especially suited for high school pupils and beginners in botany in college. The inclusion of the cultivated plants is a very welcome addition. From the parks and gardens these plants are always falling into the hands of the student and the disappointment which arises when no trace can be found in the older manuals is familiar to every teacher. This scheme which recognizes the wild and cultivated forms in the same work is commendable not only because it facilitates determination but also because it may throw a new light on relationships.

F. D. K.

Purdue Univ.

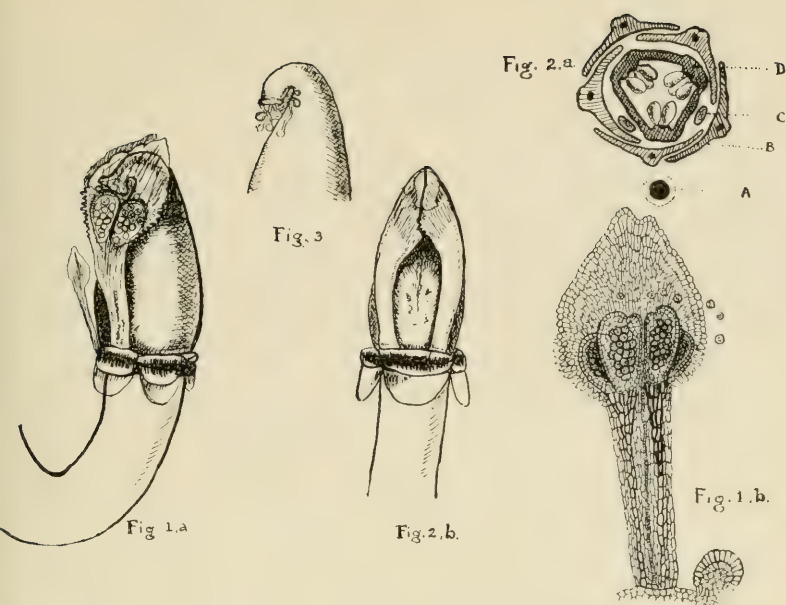
Viola arvensis Murr. in Northern Indiana.

BY J. A. NIEUWLAND.

It is not all certain that the plant generally reported for the midland as *Viola Rafinesquii* Greene, is really that plant in all cases. I have noted a number of such in the U. S. National Herbarium as being really the European *Viola arvensis* Murr.; a plant long confused with the other. I have never found *V. Rafinesquii* in the middle west, but I have found the other plant, introduced in several rather widely distant places in St. Joseph County, growing in waste places and dry sandy fields left uncultivated for some years. In two places particularly at Webster's Crossing and at the Four Mile Bridge. *Viola arvensis* not only maintains itself well, but is spreading considerably. This plant has been omitted from Britton's Floras, presumably as not occurring in the United States east of the Mississippi River and presupposing possibly and mistakenly that the plant reported in our region is *Viola Rafinesquii*. *Viola tricolor* Linn., the small flowered plant from which our numerous cultivated forms are derived, has also escaped at Notre Dame, but is not as well able to maintain itself in waste places.

Pages 64-78, published April 1, 1813.

Page 62 should be 64 and 76 is 78; each page number between should read two numbers higher.



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VOL. III.

OCTOBER, 1913.

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THE AMERICAN MIDLAND NATURALIST

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that of the Prairie States

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

CONTENTS

Rosa in North Dakota	<i>J. Lunell</i> 135
New Plants from North Dakota.—XI.	<i>J. Lunell</i> 141
Another <i>Rhus glabra</i> Segregate from Nebraska	<i>J. Lunell</i> 147
Notes on Box Elders.—I	<i>B. F. Bush</i> 148
Notes on Priority of Plant Names	<i>J. A. Nieuwland</i> 150
Our Birds in the Winter of 1912-13	<i>Brother Alphonsus, C. S. C.</i> 158
Comparative Migration of Our Birds in Spring	<i>Brother Alphonsus, C. S. C.</i> 161
<i>Linnaea americana</i> in Indiana	166

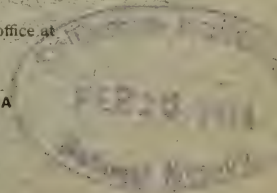
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Rosa in North Dakota.

BY J. LUNELL.

Clavis analytica.

- A. Spinae infrastipulares absentes vel inconspicuae. Caudices setosi vel spinosi.
- a. Caudices herbacei, nec umquam magis quam suffrutescentes, 1-2 pedales.
 - b. Foliola 7-11, obovata, subtus dense pubescentia, spinae rigidae. . . . 1. *R. heliophila* Greene.
 - b. Foliola 7-11, inter quae posita sunt 1-8 foliola parva. . . . 2. *R. heliophila* var. *foliosissima*.
 - b. Foliola 5-9, subtus glabra, nervis medianis et marginibus exceptis, spinae fragiles, paene setis consimiles. . . 3. *R. Lunellii* Greene.
 - a. Caudices arbusta lignea sunt, 2-5 pedales.
 - c. Foliola 5-9, receptacula 1-1.5 cm. diametro, achaenia 4 mm. alta.
 - d. Sepala integra vel subintegra. 4. *R. gratiosa*.
 - d. Sepala exteriora valde pinatifida. 5. *R. gratiosa* var. *dulcissima*.
 - c. Foliola 7-11, receptacula 2 cm. diametro, achaenia 6 mm. alta. 6. *R. polyanthema* sp. nov.
- A. Spinae infrastipulares presentes et ceteris spinis ampliores. Caudices non setosi.
- a. Rachis folii assiduo spinosa.
 - b. Petioli, petioluli, rachis glabri, lamina

- folioli inferior et nervus eius medianus
glabri vel subglabri.....7. *R. deserta*.
- b. Petioli, petioluli, rachis, nervus folii
medianus inferior glanduloso-hispidi,
folia subtus pubescentia et resinosa.
.....8. *R. poetica* sp. nov.
- a. Rachis folii numquam vel not assiduo
spinosa. Foliola subtus dense pubescentia.
- b. Spinae robustae, rectae vel aliquan-
tulum curvatae...9. *R. terrens* (*R. Maximiliani* Nees?).
- b. Spinae graciles, rectae.
- c. Partes plantae variae omnes valde
confertae.....10. *R. subnuda*.
- c. Partes plantae variae omnino non
confertae.....11. *R. naiadum* sp. nov.

Analytical key.

- A. Infrastipular spines wanting or not prominent.
Stems bristly or prickly.
- a. Stems herbaceous and never more than
suffrutescent, 1-2 ft. high.
- b. Leaflets 7-11, 'obovate', densely pu-
bescent beneath, prickles stiff... 1. *R. heliophila* Greene.
- b. Leaflets 7-11, and between them
1-8 small leaflets.....2. *R. heliophila* var. *foliosissima*.
- b. Leaflets 5-9, glabrous beneath, except
on the midveins and margins, prickles
soft, almost as bristles.....3. *R. Lunellii* Greene.
- a. Stems woody shrubs, 2-5 ft. high.
- c. Leaflets 5-9, receptacles 1-1.5 cm.
in diameter, achenes 4 mm. high.
- d. Sepals entire, or nearly so....4. *R. gratiosa*.
- d. Outer sepals strongly pin-
natifid.....5. *R. gratiosa* var. *dulcissima*.
- c. Leaflets 7-11, receptacles 2 cm.
in diameter, achenes 6 mm.
high.....6. *R. polyanthema* sp. nov.
- A. Infrastipular spines present, and larger than
the other spines. Stems not bristly.
- a. Leaf-rachis regularly prickly.

- b. Petioles, petiolules and rachis glabrous, lower surface of leaf and median nerve glabrous or nearly so.....7. *R. deserta*.
 - b. Petioles, petiolules, rachis and lower median nerve of leaflet glandular-hispid, leaflets pubescent and resinous beneath.....8. *R. poetica* sp. nov.
 - a. Leaf-rachis not at all, or irregularly prickly. Leaflets densely pubescent beneath.
 - b. Spines stout and straight or somewhat curved....9. *R. terrens* (*R. Maximiliani* Nees?).
 - b. Spines straight and slender.
 - c. All the parts very crowded. In rolling prairies, ravines, thickets and open woods.....10. *R. subnuda*.
 - c. The parts not crowded at all. In dense woodland, bordering rivers.....11. *R. naiadum* sp. nov.
1. *Rosa heliophila* Greene.

Vide leaflets II, 132 (1911), to replace the untenable name *R. pratincola*, to be found in Pittonia IV, 13, (1899), previously applied to a species of European origin. As this is the common prairie rose, growing everywhere on high and low virgin prairie, and also in cultivated fields, it is without doubt the plant suggested by our present governor, L. B. Hanna in 1907 and approved by the legislature as the State Flower of North Dakota.

- 2. *Rosa heliophila* var. *foliosissima*. Vide Midl. Nat. 157, (1912).
- 3. *Rosa Lunellii* Greene. Vide Leaflets II, 132, (1911).
- 4. *Rosa gratiosa*. Vide Midl. Nat. II, 154, (1912).
- 5. *Rosa gratiosa* var. *dulcissima*.

Though the pinnatifid outer sepals are a constant character in the shrub used as type, and though they are a strong character in other species, they are unreliable in this special group of roses, and I have for this reason reduced the species described in Midl. Nat. II. 287, (1912) to variety rank.

6. *Rosa polyanthema* sp. nov.

Rami, recentes, floriferi et steriles, spinis rectis, deciduis, neque longitudine admodum variabilibus, tenuissimis, setis haud dissimilibus armati. Stipulae angustissimae, integrae, subtus valde tomentosae, magis minusve glanduliferae, marginaliter saltem. Rachis folii et petioluli dense albido-tomentosi, glanduliferae, marginaliter saltem. Rachis folii et petioluli dense albido-tomentosi, glanduliferi, plerumque spinosi. Foliola 7—plerumque 9, in surculis recentibus validis saepe 11, oblonga vel obovata vel paene orbicularia, basi saepissime cuneata, apice obtuso vel retuso vel acuto, 2.5-5 cm. longa, 1.5-3.5 cm. lata, petiolulata, serrata, dentibus procurvis, fere glabrata superne, glauca, magis minusve tomentulosa, glandulosa etiam subtus, praesertim nervo med. ano. Flores corymbosi, numerosi (usque 33) vel solitarii. Sepala lanceolata, interne et marginaliter albido-lanata, tergo et apicibus longis glandulis stipitatis hispida, exteriora pinnatifida. Receptaculum rubrum, pomiforme vel pyriforme, glabrum, 2 cm. diametro. Achaenia 6 mm. longa.

The young branches, flowering as well as sterile, covered with a profusion of straight, deciduous prickles, not very variable in length, very weak, being hardly more than bristles. Stipules very narrow, entire, densely tomentose beneath, more or less glanduliferous, at least on the margins. Leaf-rachis and petiolules densely white-tomentose, glanduliferous, and usually prickly. Leaflets 7—usually 9, on vigorous young shoots often 11, oblong, or obovate, or nearly orbicular, mostly cuneate at base, apex obtuse, or notched, or acute, 2.5-5 cm. long, 1.5-3.5 cm. wide, petiolulate, serrate, with the teeth directed forwards, almost glabrate above, glaucous and more or less tomentulose and even glandular beneath, especially on the main nerve. Flowers corymbose, numerous (even to 33) to solitary. Sepals lanceolate, white-woolly within and on the margins, hispid with stipitate glands on the whole back, including the long tips, the outer ones pinnatifid. Receptacle red, pomiform or pyriform, glabrous, 2 cm. in diameter. Achenes 6 mm. long.

This rose, by far most exuberant among its allies, was collected by the writer both in flower and fruit on August 23, 1913 in alluvial ground on the banks of the Missouri, not far from Bismarck, Burleigh County.

7. *Rosa deserta*. Vide Midl. Nat. II., 156, (1912).

8. *Rosa poetica* sp. nov.

Arbustum fere metrale, spinis gracilibus, sed firmis, rectis, neque basim versus valde ampliatis, sub stipuliis permanentioribus, et ramis nitidis, obscure fuscis vestitum. Stipulae superne glabrae, subtus pubescentes, setis apice glandulosis marginatae. Rachis et nervus medianus inferior folii, petioli et petioluli glandulis magis minusve stipitatis hispidi. Praeterea rachis apicibus glandulosis setosa est, et spinosa. Foliola 7-9, petiolulata, ovalia, basi magis minusve cuneata, apice obtuso vel acuto, bis serrata subtus resinosa. Sepala integra vel lobata. Flores corymbosi vel solitarii. Receptaculum rubrum, globulare vel pyriforme, apice elongato, 1 cm. diametro.

Shrub nearly meter-high, with slender, but firm, straight prickles, not considerably thickened at base, quite persistent beneath the stipules, and with shining, dark-brown branches. Stipules glabrous above, pubescent beneath, margined with glandular-tipped setae. Leaf-rachis, lower median leaflet-nerve, petioles and petiolules hispid with more or less stipitate glands. Rachis, in addition, bristly with glandular tips, prickly. Leaflets 7-9, petiolulate, oval, with more or less cuneate base and obtuse or acute apex, doubly serrate, glabrate above, pubescent and resinous beneath. Flowers corymbose or solitary. Sepals entire or lobed. Receptaculum red, globular or pyriform, with pointed apex, 1 cm. in diameter.

This plainly distinct ally of *R. Fendleri* was collected by the writer on August 23, 1913, on the banks of the Missouri, not far from Bismarck, Burleigh County.

9. *Rosa terrens*. Vide Midl. Nat. II., 155, (1912).

Considered distinct on account of its enormous spines, etc., but perhaps correctly suggested by Dr. P. A. Rydberg as identical with *R. Maximiliani* Ness., though this species has a large yellow fruit, as stated in Rydberg's Flora of Montana, 255 (1900.)

10. *Rosa subnuda*. Vide Midl. Nat. II. 153. (1912).

11. *Rosa naiadum* sp. nov.

Caudex et rami lignei obscure fusci, nitidi, aequae atque rami herbacei spinis fragilibus, rectis, e basi compressis, erectis vel pronis, infrastipularibus ceteris permanentioribus vestiti, vel paene vel omnino nudi. Stipulae amplae, marginibus denticulatis

et dentibus apice glandulosus, superne glabrae, subtus pubescentes. Rachis folii villosa, saepe glandulis et interdum spinis conspersa. Foliola 5-plerumque 7, in surculis recentioribus non raro 9, obovata usque ovalia, obtusa, basi magis minusve cuneata, serrata, serraturis procurvis, ampla, 2.5-4 cm. longa, petiolulata, superne glabra, subtus et praecipue marginibus et nervis tomentulosa. Flores nitidi, rubicundi, circiter 5 cm. lati, corymbosi vel solitarii. Sepala lanceolata, integra vel lobata, interne et marginaliter albido-lanata, tergo tomentuloso. Receptaculum rubrum, globulare, 1.5 cm. diametro.

Stem and woody branches dark-brown, shining, sparingly dotted, as well as the herbaceous branches, with weak, straight prickles, erect or inclined, compressed from the base, the infrastipular ones more persistent than the others, or almost or altogether naked. Stipules large, with denticulate margins and glandular-tipped teeth, glabrous above, pubescent beneath. Leaf-rachis villous, often with glandular admixture and an occasional prickle. Leaflets 5—usually 7, on young shoots not seldom 9, obovate to oval, obtuse, with more or less cuneate base, serrate, with the serratures directed forwards, large, 2.5-4 cm. long, petiolulate, glabrous above, tomentulose beneath, especially on margins and nerves. Flowers bright pink, about 5 cm. wide, corymbose or solitary. Sepals lanceolate, entire or lobed, white-woolly within and on the margins, tomentulose on the back. Receptacle red, globular, 1.5 cm. in diameter.

This species has an ample, not at all crowded foliage, which makes it distinguishable at first glance from its ally, *R. subnuda*, and was collected by the writer on the banks of Mouse River at Minot, Ward County, on July 1, 1909 (type), and on the banks of James River at Jamestown, Stutsman County, on August 25, 1913.

Writings of earlier dates, if any of them should be found irreconcilable with data given in this paper, are herewith repealed, as far as the differences go. The author hopes that the contributions here made will do their share in aiding to a better understanding of this extremely difficult and altogether too long time neglected genus. And he further hopes and wishes that they will exercise a stimulating influence in favor of a continued study of the multifiform roses of his state.

Leeds, North Dakota.

New Plants from North Dakota.—XI.

BY J. LUNELL:

Antennaria angustiarum sp. nov.

Planta in coloniis parvis, marium et feminarum in vicem vicinis, genita. Stolones longitudinem caulis dimidiam obtinentes. Plantae stamineae et pistillatae longitudine aequales, 10–12 cm. altae, femineae lente aliquantulum elongatae. Caulis infimus foliis 4–7 lanceolatis, superiorum proximis minoribus verticillatim cinctus. Folia basilaria tomento laneo subtili, remisso et radendo facile amoto, post pluvias fere pellucido et sub lente tantum percepto, superne vestita. Simul folia stolonum radican- tium tomento aequè appresso-sericeo, per annum primum manente, gaudent. Folia basilaria 2–3 cm. longa, 8–12 mm. lata, late oblanceolata vel elliptica, basi cuneata, petiolo alato sensim angustato, textura tenui sed firma. Mas capitula pauca, plerumque 3–4, dense congesta habet, femina capitula 2–5, primum cumu- lata, postea corymbosa, pedicellis longitudine varia brevibus ornata. Involucra 8 mm. alta. Bracteae maris albae, latae, obtusae, integrae, feminae albae, externis macula fusca addita, angustae, acutae, integrae.

Plant growing in small colonies, males and females near each other. Stolons about one-half the length of the stem. Mature staminate and pistillate plants of equal length, 10–12 cm. high, the pistillate becoming somewhat longer in the late fruiting stage. The lowest end of the stem encircled by a rosette of 4–7 lanceolate leaves, smaller than the leaves next above them on the stem. Primary basal leaves carry on the upper side a thin, woolly tomen- tum, loose and easily removed by scratching, after rains looking almost transparent, and then almost needing the lens to become visible. At the same time the leaves on the rooting stolons have an equally appressed silky tomentum which they retain during the whole first season. Basal leaves 2–3 cm. long, 8–12 mm. wide, broadly oblanceolate or elliptic, with a cuneate base gradually narrowed into the winged petiole, their texture being thin, but firm. The male plant has a dense cluster of few, generally 3 or 4 heads, the female plant has 2–5 heads, at first clustered, later corymbose with short pedicels of variable length. Involucres 8

mm. high. Male bracts white, broad, obtuse, entire. Female bracts white, the outer with a brown spot, narrow, acute, entire.

This species is easily differentiated from its allies by the characteristic outline as well as pubescence of its leaves, and by its tall, few-headed staminate plants. Its home is the high, rolling prairie, and it was collected by the writer in a grassy cut, on both sides lined in profusion with *Eleagnus argentea*, 3 or 4 feet high, on the upper middle plateau of Butte, Benson County, the type specimen dated June 1, 1913.

Chamaesyce glyptosperma var. **integrata** var. nov.

Marginibus foliorum integris.

Plant with entire leaf margins.

Collected at Leeds, Benson County, by the writer, on Aug. 20, 1906.

Amarella theiantha var. **lactea** var. nov.

Corolla albido-flavescens.

Corolla ochroleucous. In the type the color of the tube is a bright sulphur-yellow, and of the lobes white.

In low gravelly prairie, at Towner, McHenry County.

Amarella theiantha var. **livida** var. nov.

Lobi corollae obscure lividi.

Corolla lobes of a dull bluish color.

On the lower end of hillsides, occasionally at Butte, Benson County.

Epilobium adenocaulon var. **pseudocoloratum** var. nov.

Caulis in aestate posteriore suboles basiales subsessiles evolvens; folia ampla, membranacea, lanceolata, serrulata, conspicue petiolata; petioli alati.

Stem developing subsessile basal rosettes during the latter half of the summer; leaves large, membranous, lanceolate, serrulate, distinctly perioled; petiole winged.

In a cold bog along a rill in the woodland encircling Pleasant Lake, Benson County, August 14, 1911.

Cirsium nebraskense var. **formidosum** var. nov.

Spinae foliorum 7 mm. longae et lobi profundi.

Leaf spines 7 mm. long, even stouter than the spines of *C. ochrocentrum*. Leaves as in var. *discissum*, which is the prevalent

form and has weak spines of variable length (2-5 mm.). The type is in my herbarium and identical with No. 49, Fasc. V. of Petrak's *Cirsiotheca Universa*, where it has been introduced under the name of *Cirsium Flodmannii* Petrak. It was collected by J. C. Blumer near Minot, Ward County: "America borealis," North Dakota, in pratis siccis, arenosis prope pagum "Minot," 9-12. IX. 1911.

***Erigeron asper* var. *subinteger* var. nov.**

Quaedam folia denticulata.

Some leaves denticulate.

Sparingly on prairies at Kulm, La Moure County, where it was collected by Dr. J. F. Brenckle on May 15, 1912.

***Grindelia squarrosa* var. *quasiperennis* var. nov.**

Folia denticulata, basin versus angustata.

Leaves denticulate, narrowed toward the base.

Occasionally found within Benson County, in barren, alkaline soil.

***Amelanchier macrocarpa* sp. nov.**

Arbustum 0.5-2 m. altum. Folia recentiora tomento pallido, flavido-albo, mox calvescente dense operta, surculi autem recentes, pedunculi, pedicelli, petioli, nervi mediani foliorum laminae inferioris tardissime deteresi. Folia suborbiculari-oblonga, basi rotunda vel subcordata vel raro acutula, apice rotundato vel retuso vel mucronato, recentia in longitudinem plicata, 2-6 cm. longa, 1.5-4.5 cm. lata, vetustiora firmissima, candide et saturate viridia, vehementer venosa, praecipue in marginis partibus duobus e tribus inaequaliter serrato-dentata, dentibus apice callosis, alia autem folia dentibus paucis minimis aliaque marginibus integris vestita. Petala circiter 8 mm. longa, obovata. Pedicelli fructiferi 3-10 mm. longi. Pomum succulentum, dulce, atrum vel atropurpureum, 10 mm. diametro, ab Idibus Juniis per mensem Julium maturum. Flores de Aprili ulteriore ad Junium priorem apparent.

Shrubs 0.5-2 m. high. The young leaves densely covered with a pale yellowish-white tomentum, soon becoming glabrate, but the young twigs, peduncles, pedicels, petioles and median nerves of the leaves on the lower side clearing off very late. Leaves suborbicular-oblong, with rounded or subcordate or rarely acutish base, and with rounded or retuse or mucronate apex, folded length-

wise when young, 2-6 cm. long, 1.5-4.5 cm. broad (comparatively broader than in *A. oblongifolia*), older of very firm texture, bright and deep-green, strongly veined, irregularly serrate-dentate, especially on the upper two-thirds of their margins, with small callous-tipped teeth, but other leaves have only a few, very small teeth, and still others have even entire margins. Petals about 8 mm. long, obovate. Fruiting pedicels 3-10 mm. long. Pome juicy, sweet, black or black-purple, 10 mm. in diameter, ripe during the latter part of June-July, while the species is flowering from the last part of April until the first part of June. It reaches its largest size in moist woods, and is comparatively small in rocky uplands. Besides being planted for its ornamental effect in lawns, this shrub is highly valued for culinary purposes on account of its large, delicious pomes. To the laity, however, the size does not entitle them to such a dignified rank, but simply reduces them to "berries," as a pome is expected to have at least the size of a crabapple.

Usually distributed as *A. alnifolia* Nutt., but this shrub has leaves glaucous and coarsely crenately serrate-dentate above the middle, entire below the middle, and coming nearer to the orbicular outline than ours; the pomes are purple with bloom, 6-8 mm. in diameter. It grows on banks of streams. Our species is nearest related to *A. oblongifolia* (T. & G.) Roem., but this shrub has leaves oblong, 4-6 cm. long, 1.5-2.8 cm. broad (thus narrower than ours), finely and evenly serrate, light-green, and its pome is smaller, 6 mm. in diameter, and crimson or purplish.

The type was collected by the writer at Pleasant Lake, Benson County, on May 21, 1912 and July 28, 1911.

***Rhus angustiarum* sp. nov.**

Caudex subterraneus ramos caudicibus similes sursum versus emittens, anno 1: mo pedales, 2: do 3-pedales, 3: 5-pedales, 4: to 7-pedales. Pars tota lignea nuda, gemmis lucidis succulentis in locos foliorum priorum substitutis, fusca, lenticellata. Apices herbacei tempestivi ex petioli tegmento glauco scente purpureo-maculoso primitus vestiti, tarde obscure spadices, glutinosi. Folia 15-30 cm. longa, valde conferta. Foliola 13-17, interdum 19, mensura et forma admodum variabilia, 3-9 cm. longa, oblongo-lanceolata, apice acuminato vel acuto, basi rotundata, foliola foliorum superiorum ramorum frugiferorum paucis sessilia, foliorum

autem inferiorum et omnia ramorum steriliū petiolos conspicuos usque 4 mm. longos vel breviores gerentia, serraturae aequales vel inaequales, utrinque 3-18, neque profundae neque acres, facies superior obscure viridis, nitida, matura siccata lucide viridis, inferior folioli recentis lucide viridis, maturantis pallide glauca, maturi insigniter dealbata. Panicula et florens et frugifera pyramidalis, densa, in saltibus minor (3-9 cm. alta), in campis apertis maior (7-15 cm. alta). Fructus complanati, ambitu paene orbiculares, apice brevi, immaturi succulenti, maturi sicci, 4 mm. alti.

Stem subterranean, sending forth stem-like branches upwards, these being one foot high in the first year, 3 feet in the second year, 5 feet in the third year, and 7 feet in the fourth year, which is the maximum height seen by the writer. The wooden part nude throughout, with scattered, light, juicy buds on the sites of former leaves, brown, lenticellate. The young herbaceous tops and the petioles with a purple-spotted glaucescent bloom early in the season, later dark chestnut-colored, glutinous. Leaves 15-30 cm. long, very crowded. Leaflets 13-17, sometimes 19, very variable in size and outline, 3-9 cm. long, oblong-lanceolate, with acuminate or acutish apex and rounded base, the leaflets of the upper leaves on the fruiting twigs almost sessile, but those on the lower leaves and all on the sterile twigs very plainly petiolulate with even to 4 mm. long petiolules, serratures even or uneven, 3-18 on a side, not very deep or sharp, upper face dark green, shining, at maturity becoming lightish green in drying, lower face in youngest leaflets light-green, in somewhat older ones pale-glaucous, at maturity remarkably whitened. Panicle pyramidal in flower; also in fruit, being smaller in the woodland (3-9 cm. high), larger on the open prairie (7-15 cm. high), compact. Drupelets flattened, circumference almost orbicular, with a short tip, unripe juicy, ripe dry, 4 mm. high.

In order to differentiate this species from related ones, suffice it to state, that *R. cismontana* Greene has leaflets 11-13, light-green above, 4-6 cm. long, subsessile, serratures 10-12 on each side, and panicle narrowly pyramidal; and that *R. sambucina* Greene has leaflets 11-13, light-green above, 7-10 cm. long, subpetiolulate, serratures 11-12 on each side, and panicle oval, lax.

From the state of Minnesota with its abundance of *R. glabra* segregates this group of shrubs is said to have established itself on the western border of the Red River of the North, but the

writer has not seen any representatives of these allies, which are probably *R. petiolata* Greene or other Minnesota natives. The species here described belongs to central North Dakota, and its only known habitation is 90 miles west of the Red River on the banks of Devil's Lake, where the water basin is narrowed to a channel across which a railroad bridge and a public road have been built. For this reason the place has received its name, Narrows, and hence also is derived the species name of the plant. It was collected by the writer on June 26, 1913, and on August 12 of the same year, at which later date the leaves had already commenced to attire themselves in their gorgeous, scarlet, autumnal garb.

Dodecatheon thornense sp. nov.

Caudex perennis, parvus, radiculis fibrosis validis adiunctis. Scapus erectus, procerus, artus, gracilis, interdum autem robustus, 2-6 dm. altus, fistulosus. Folia longitudinis scapi partem quintam usque tertiam attingentia, suberecta, anguste usque late lanceolata, in petiolum longum alatum attenuata, nonnihil succulenta, siccata membranacea, glabra, integra, apice obtusissimo, 10-15 cm. longa, 1.5-3 cm. lata. Bracteae late ovatae, acutae. Calyx ad pedicellum versus sensim reductus, lobi triangulari-lanceolati. Umbella floribus 10-15 plerumque vestita. Pedicelli longitudine variabili, in flore recurvati, in fructu erecti. Deest in typo corolla. Capsula crustacea, subcylindrica, acuta, valvis 5 brevibus apice aperta, 0.7-1.2 cm. longa.

Rootstock perennial, being a small corm with strong fibrous roots attached. Scape erect, tall, narrow and slender, though in some plants quite robust, 2-6 dm. high, hollow. Leaves one-fifth-one-third of the length of the scape, suberect, narrowly—broadly lanceolate, tapering into a long, margined petiole, somewhat fleshy, after drying membranous, glabrous, entire, very obtuse at the apex, 10-15 cm. long, 1.5-3 cm. wide. Bracts broadly ovate, acute. Calyx tapering into the pedicel, lobes triangular-lanceolate. Umbel usually 10-15 flowered. Pedicels of variable length, recurved in flower, erect in fruit. Corolla not seen for the type locality, but will be described in this journal during the next season. Capsule crustaceous, subcylindrical, pointed, opening through 5 short apical valves, 0.7-1.2 cm. long.

This species is plainly distinct from its nearest relative *D. pauciflorum* Greene (a plant distributed from Montana to the

Pacific coast), having leaves much smaller in proportion and of a peculiar cut, narrow, very obtuse, with a leaning to spatulate.

In the year of 1889, month of June, the writer found at Willow City, Bottineau County, a flowering *Dodecatheon* of small size (about 2 dm. high), the growth probably inhibited in part by the extreme drought of the entire season. It is lamentable that the specimen was lost, especially on account of the impossibility to find another one of its kind before the present year, 24 years intervening. It had been found, I believe 10 years ago, at Laureat, Rolette County, by Miss Lela Lovell, now of Minneapolis, and at Thorne, in the same county at a distance of only a few miles from Laureat, four years ago by Prof. C. B. Waldron of the North Dakota Agricultural College, and, thanks to the detailed notes I received from him, I succeeded in securing the fruiting plant on the 11th of July last in the locality where it was discovered by him. I hardly need to add that the species has been named from its habitat. The plant produces an abundance of seeds, and it would unquestionably be well established in moderately moist meadows. But I could not find it where cattle was grazing, and the forbidden spots are scarce. It is therefore no wonder that this species has apparently a desperate struggle for its existence.

Leeds, North Dakota.

Another *Rhus glabra* Segregate from Nebraska.

BY J. LUNELL.

Rhus Hapemanii sp. nov.

Frutex ramis robustis, striatis, pullis, nitidis, lenticellatis ornatus; frondes amplae et laxae, petiolus et rachis conjuncti 3 dm. longi; foliola 11-17, spatio unciali remota, magnopere petiolulata, acuminata, 9-11 cm. longa, 3-3.5 cm. lata, oblongo-lanceolata, admodum serrata, singulis marginibus circiter 15 serraturas inaequales praebentibus, subcoriacea, subfalcata, lamina superiore magnificenter et profunde viridia, inferiore, et praesertim in speciminibus maturis, vix glaucescentia; paniculae floriferae late pyramidales, 2 dm. altae, basi latissimae; paniculae fructiferae 2 dm. altae, paulum autem angustiores; rami paniculae tomentu-

loso-pubescentes; fruticuli permulti, 3 mm. diametro, subovato-subglobosi.

A shrub with stout, striate, brown, shining, lenticillate branches; foliage large and ample, petiole and rachis together 3 dm. long; leaflets 11-17, about 1 inch apart, strongly petiolulate, acuminate, 9-11 cm. long, 3-3.5 cm. wide, oblong-lanceolate, strongly serrate, with about 15 somewhat uneven serratures on each margin, subcoriaceous, subfalcate, upper face a rich, deep green, lower scarcely glaucescent at all, especially on fruiting specimens; panicle in flower broadly pyramidal, 2 dm. high, widest at base, in fruit of the same height, but not exactly as wide; panicle branches tomentulose-pubescent; druplets many, 3 mm. in diameter, subglobose with an inclination to ovate.

Its ally, *Rhus cismontana* Greene, known from western Nebraska and Kansas, is much smaller in all its parts, has 11-13 leaflets, which are 4-6 cm. long, subsessile and glaucescent beneath, and its fruiting panicle is about 9 cm. high.

The plant just described seems to be a native of southeastern Nebraska, as it was collected near Minden, a locality situated somewhat east of the central perpendicular line in the southern part of that state. As types have been used specimens collected in flower on July 8, 1912, and in fruit on Sept. 12, 1912, by Dr. H. Hapeman, and the species name has been conceived with a view of doing honor to him as the discoverer of this remarkably large and magnificent sumach.

The task of differentiating this species from its allies has been facilitated in great part through the valued helpfulness of Dr. Edward L. Greene, who accentuated the essential points in the determination and added to my gratitude by kindly sending me leaflets of *R. cismontana* both from Kansas and Nebraska.

Leeds, North Dakota.

Notes on Box-Elders.—I.

BY B. F. BUSH.

Having read Dr. Rydberg's treatment of *Negundo*¹ in Rocky Mountain Flora, I wrote at once to Dr. Nieuwland who obligingly

¹ Bull. In. Bot. Club. XL. : 2, p. 54-56. Feb. (1913.)

sent me his paper on Box-elders, real and so-called.¹ After having read and compared these two papers, I began a systematic examination of the Box-elders growing about Courtney, Missouri. Some five or six years ago I decided that we had two, or possibly three, species of *Negundo* here, and was taking the common tree of the river bottom here for *N. Negundo*, and was referring the other with some doubt to *N. Texanum*, a species I was wholly unacquainted with. A large Box-elder is growing in my back yard, which I have known for more than 25 years, and this tree I thought might be the real *N. Negundo*. In rocky woods on the hills around, there is another tree that has densely-velvety twigs, which years ago I referred to *N. Texanum*. Fresh flowering specimens of these two trees were sent to Dr. Rydberg last April, who identified them as *N. Negundo* and *N. interius*, respectively, the latter a tree supposed to inhabit the Rocky Mountain region of Western Nebraska and Western Kansas. As the season advanced and the fruit began to mature, I decided after a careful study of several hundred trees in Jackson County, that these two trees were more properly referred to *N. Nuttallii* and *N. interius*.

I have lately sent good fruiting specimens of these two trees to Dr. Nieuwland, who writes me that they are good specimens of *N. Negundo* and *N. Nuttallii*. As there seems to be some obscurity about these species, I shall give a short examination of the principal characters accorded each, and compare these with those of the trees I now refer to them, that we may the more fully understand them.

Dr. Rydberg in his key to the species of *Negundo*², separates the species into two groups, the first with branches of the season glabrous, or with a few scattered appressed hairs, the second with branches densely-velutinous with short spreading hairs. In the first section he places *N. Negundo* and *N. Nuttallii*, and in the last section *N. interius* and *N. Texanum*.

Dr. Nieuwland agrees with Dr. Rydberg in this distinction so far as *N. Negundo*, *N. Nuttallii* and *N. interius* are concerned, but he does not recognize *N. Texanum* as of specific rank, putting it with *N. Californicum*.³ Of the four species mentioned above as given by Rydberg in his key, he distinguishes them by the character of the fruit, which in *N. Negundo* and *N. Texanum* is

1 Midland Naturalist, 2:6, p. 129-140. Nov. (1911.)

2 Rydberg, l. c. p. 54.

3 Nieuwland, l. c. p. 139.

"pinched" at the base or distinctly constricted below into a stipe-like base, and in *N. interius* and *N. Nuttallii* not at all constricted below. The two trees I have under observation both have the fruit not at all "pinched" at the base or constricted into a stipe-like here.

Dr. Rydberg and Dr. Nieuwland agree that *N. Nuttallii* has leaflets with tufts of hairs in the axils of the veins, and that *N. Negundo* has leaflets glabrous or nearly so at maturity. The tree I am calling *N. Nuttallii* has these tufts of hairs in the axils of the veins, but the one I take to be *N. interius* has not this character.

Dr. Nieuwland¹ says that in *N. Negundo* the secondary veins and mesophyl of the leaflets are not conspicuous, and the leaves are thin and membranous.² The tree I take to be *N. Nuttallii* has the secondary veins and mesophyl of the leaflets conspicuous and the leaflets are thick and very veiny.

According to Dr. Nieuwland³, *N. Negundo* seems almost totally absent from the Middle West, but I have seen trees I take to be *N. Negundo* in Southern Kansas, Southwestern Missouri and Northern Arkansas. That the preponderance of evidence is in favor of the tree I am calling *N. Nuttallii* being that species, is, that Nuttall was here at Courtney, Missouri at the beginning of the 19th century, and he gives as the range of his *Negundo fraxinifolium*, "Northwestward on the banks of the Missouri to the Mountains." The tree I am calling *N. interius* can not be *N. Negundo* for the reason that it has densely velvety-pubescent twigs, thick rugose leaflets, secondary veins and mesophyl prominent and whitish, fruit not "pinched" at base, wings of fruits scarcely not at all decurrent on fruit body, and leaves frequently bipinnate.

Courtney, Missouri.

Notes on Priority of Plant Names.

BY J. A. NIEUWLAND.

CATHARANTHUS.

It is difficult to see why the new name *Ammocallis*⁴ was used for a segregate genus from *Vinca*, when there was at least one

¹ Nieuwland, l. c. p. 136.

² Nieuwland, l. c. p. 136.

³ Nieuwland, l. c. p. 138.

⁴ Small, J. K., Fl. SE. U. S. p. 935, (1903) also 2nd Ed. (1913).

valid older one. *Vinca rosea* Linn. was first taken out of the genus and made the type of a new one by Reichenbach¹ under *Lochnera*. There was, however, an older *Lochneria* Scopoli.² In 1833 S. Don founded the genus *Catharanthus*³ with *Vincra rosea* Linn. and *Vinca pusilla* Linn. The former is mentioned first by Don and is therefore to be taken as type should there be any question of ambiguity as to successive segregation.⁴

Catharanthus S. Don 1. c.

"*Vinca species* Linn." 1. c.

Lochnera Reichb. 1. c. (1828) not *Lochneria* Scopoli (1777) 1. c.

Ammocallis Small (1903), (1913) 1. c.

Catharanthus roseus G. Don. 1. c.

Lochnera rosea Reichb. 1. c.

Ammocallis rosea Small 1. c. p. 936.

Vinca rosea Linn., Syst. Ed. x. p. 944, (1758).

NEZERA.

Rafinesque's genus *Nezera*⁵ is evidently based on the *Linum striatum* of Walter. Dr. Small⁶ accepts Reichenbach's⁷ later name *Cathartolinum* based on the type *Linum Catharticum* Linn. As long as the two types are retained in the same group segregate, we would expect that the older name be taken up as dictated by the rules of priority. Following is the diagnosis of Rafinesque, given here so that those to whom this author's work is not readily accessible, may use their own judgment as to the practical identity of *Nezera* and *Cathartolinum*, as far as our American species are concerned.

"899 *NEZERA* Raf. differs from *Linum*, calix with 5 segments unequal in size or shape, stamens equal to the calix, anthers oblong, styles 5 (p. 65) very long stigmas thick oblong capsule 5 locular.—

1 Reichenbach, H. G. L., Consp. Reg. Veg. p. 134, (1828).

2 Scopoli, J. A. Introd. p. 271, (1777).

3 Don. G., Gen. Hist. Dichl. Pl. iv., p. 95, (1838).

4 The Kew Index gives the date 1836 for Don's work, but volume 4 of the History has 1838 on the title page. The name *Lochnera* Reichb. was taken up by E. Spach, Hist. Nat. Veg. VIII., p. 526, (1839), having *Vinca rosea* Linn. as type.

5 Rafinesque, C. S., New. Fl. N. Am. II., p. 64, seg. (1836).

6 Small, J. K., Fl. S. E. U. S. 2nd ed. p. 662, (1913) also N. Am. Fl. 25, p. 71. Britton N. L., Ill. Fl. II., p. 436, (1913).

7 Reichenbach, H. G. L., Handb. p. 306, (1837).

Another *G.* of the family *Linidia* besides those of my fl. tellur. Habit similar, but the inequality of calix is very striking and generic. The name means *not true flax*, and several sp. of it are perhaps blended in *Linum*. . . ."

"901 *NEZERA ALBIFLORA* Raf. *Linum striatum* Walter in Coll. herb. stem virgate simple subangular, leaves linear acuminate adpressed, margin rough, upper subulate, flowers subcorymbose. few, peduncles equal to calix segments ovate acuminate uninerve. petals obovate—Hills of Georgia and Carolina, pedal slender, leaves smaller and not so crowded as in the last, flowers with 3 corymbose branches bearing 2 or 3 flowers, the lateral on short peduncles, calix with unequal segments but of uniform shape, petals white smaller than in the last and narrower obtuse not flabellate. Stem not striate as it ought to be in *L. striatum* of Walter omitted by all our botanists.—I find in a collection of plants made in 'Texas by Drummond (and sent me by 'Torrey without names, altho' (p. 66) he says that Hooker has named them in his compendium) two new Flax apparently of this genus which I have designated as follows. . . ."

The *Nezera albiflora* Raf. which he declined to call *Nezera striata* because he failed to find in the dried plant the striations he mentions is therefore considered by him as also the Kew Index as *Linum striatum* Walter, or *Cathartolinum striatum* (Walt.) Small which heads the list of segregates in that author's flora. Other species are *N. virginiana* (L.), *cathartica* (L.), *sulcata* (Redd), *rigida* (Pursh.), etc. *Linum* do. of the manuals.

ANYCHIASTRUM SMALL, A SYNONYM.

In the New Flora of North America Rafinesque proposed the genus *Buinalis*¹ typified by *B. floridana*. As a synonym he gives "*Herniaria floridana* Bald. do." On the authority of the Index Kewensis this is identified with *Paronychia Baldwinii* (T. & G.) Fenzl,² or *Anychia Baldwinii* T. & G.³ On studying the description of Rafinesque, it would appear that the conclusion of the Kew Index seems unwarranted; for there is a considerable discrepancy between the plant we know as *Paronychia Baldwinii* (T. & G.) Fenzl, or *Anychiastrum Baldwinii* (T. & G.) Small, and

1 Rafinesque C. S., New Flora of N. Am. Neobotanon, p. 40, (1836).

2 Fenzl. in Walp. Rep. 1, p. 262, (1842).

3 Torrey, J. & Gray, A. Fl. N. Am. 1, p. 172, (1838-40).

the plant Rafinesque must have had in mind when he proposed the genus *Buinalis*, as is evident from the description thereof herewith appended.¹

Another genus is proposed by the same author, that is

1 As the works of Rafinesque are rare we think it best to reproduce the publication of both *Buinalis* and *Plagidia*.

Rafinesque, C. S. New Flora and Botany of North America, Philadelphia, (1836), p. 40.

830 BUINALIS Raf. dioical. calix deeply 5 fid persistent, base turbinate with 5 tubercles at the clefts, segments flat edged and crowned by a thick colored membrane. Corolla none, male fl. with 5 stamens perigynous inserted on the calyx short filiform fertile, and 5 alternate sterile without anthers, sometimes lacking. In female fl. ovary ovate, style filiform elongate stigma simple. Fruit Akenae ovate smooth monosperm. *Stem articulate*, leaves opposite sessile entire stipulate, flowers fascicled—a new G. or fam. It differs from my *G. Steiremis* in fl. tellur. by dioical single calix, free stamens, etc. It has the habit of *Herniaria* and *Anychia* to which it is also related but differs by dioical flowers and single style, besides the calix not angular not acute, etc. The name was an old latin one of *Herniaria*.

831 BUINALIS FLORIDANA Raf. *Herniaria Americana* Coll. herb. *Anychia floridana* Baldw. do—prostrate diffuse subdichotome fuscate, leaves sessile cuneate or obovate obtuse or sub- (p. 41) acute, entire thickish; flowers sessile terminal in leafy ramulose.—In the sands of Florida, found by Baldwin, perennial, almost suffruticose, stems 3–6 inches long, very ramose, stipules scariose ovate acuminate, leaves small 2–3 times long, quite brown in the dry specimens; flowers minute dark purple margined of white the ends of segments truncate almost retuse forming a vault but not a hood. These flowers are at the ends of the small branches crowded with small leaves and stipules.

834 PLAGIDIA Raf. difference from *Anychia*, calix conical pentagonal, segments unequal acuminate not hooded, stamens 5 fertile. Style bifid, 2 stigmas acute. *Annual plants? leaves obliquial broader, flowers in dichotomies.* The name derives from the double obliquity of the leaves. All these genera belong to the AMARANTHIDES. . . .

p. 43. 839 ARGYROCOMA IMBRICATA Raf., etc.

. . . . A third species Par. sessiliflora N. but his *P. hernarioides* is probably of next genus.

840 PLAGIDIA RUFA Raf. *Anychia hernarioides* Mx ? dichotome scabrous, much branched astigiate entirely rufous, leaves obliquial crowded elliptic mucronate ciliate, stipules lanceolate acuminate, flowers solitary.—Described from a specimen from Florida anonymous in Collins herb. apparently the plant of Mx. but I can't be certain as he omitted the singular obliquity of the leaves almost as in *Chamasyke*, and the striking rufous color almost like snuff of the whole plant even the stipules, about 3 inches high, leaves 3 lines long, quite obliquial at the base altho's sessile, flowers few and small.

Plagidia.¹ The name as customary at times is suggested as a subgenus if not acceptable as genus, and accordingly not dignified by being put in type quite as large as the other genera in the work. That Rafinesque's mind was primarily to propose a real genus, and not simply a subdivision or subgenus in this particular case is evident from the fact that he further on he names and gives the characters of the type species as *Plagidia rufa* Raf.² The author seems to have some doubt as to the identity of this type with the *Anychia hernarioides* Mx., because Michaux omitted one or characters which Rafinesque considers important in his type. Comparison of the characters described under *Plagidia* and *Plagidia rufa* Raf. herewith reproduced with Michaux' *Anychia hernarioides*,³ latter called *Paronychia hernarioides*, and transferred by Small to his genus *Anychiastrum*, shows that it is identical with Rafinesque's *Plagidia rufa* in every minute respect. Dr. Small has designated as the type of his segregated genus above mentioned, *Paronychia riparia* Chapm.⁴ and includes also *Paronychia Baldwinii* (T. & G.) Fenzl. and *Paronychia hernarioides* (Michx.) Nutt. Although Rafinesque's type and Small's type are not the same, it would seem that as long as the two plants are not considered distinctively different enough to be in separate genera, any group containing the two should be given the older name. We therefore transfer the plants under the name *Plagidia* which possesses priority.

Plagidia Raf. l. c. p. 42, (1836), (*Buinalis* Raf.? acc. to deduction on authority of Kew Index) not of *Buinalis* Rafinesque acc. to description.

Anychiastrum Small l. c. p. 400, (1903).

Paronychia Adans. Fam. des Pl. 2, p. 272, (1763) segregate.

Plagidia hernarioides (Michx.) Nwd.

Anychiastrum hernarioides (Michx.) Small, l. c.

Plagidia rufa Raf. l. c. p. 43, (1836). (Rafinesque's type of *Plagidia*.)

Paronychia hernarioides (Michx.) Nutt.

Plagidia Baldwinii (T. & G.) Nwd.

(*Buinalis Baldwinii* Kew. Index. not Raf. l. c. p. 43.)

1 l. c. p. 42.

2 l. c. p. 43.

3 Michaux, A., Fl. Bor. Am. 1, p. 172, (1803).

4 Chapman Fl. S. U. S. Supp. p. 607, (1860).

Anychiastrum Baldwinii (T. & G.) Small l. c.

Paronychia Baldwinii (T. & G.)

Plagidia riparia (Chapm.) Nwd.

Anychiastrum riparium (Chapm.) Small, l. c. (Small's type of *Anychiastrum*).

Paronychia riparia Chapm.

Plagidia montana (Small) Nwd.

Anychiastrum montanum Small Torreyia 101, p. 230, (1910).

VITICELLA

Dr. Small¹ in adopting the name *Viticella* for the segregated genus with *Clematis Viticella* Linn. as a type, did not take the valid name whether 1753 be accepted as the "starting point" for nomenclature, or absolute historical priority admitted. The name seems to have been used for that plant as type of a new genus by Dillenius in his treatise, *Nova Plantarum Genera* p. 165, (1719). Neither the first² nor the second³ edition of his *Hortus Elthamensis* have any record of *Viticella*, most likely because the plant was not found in the Eltham Gardens, and the first publication since 1753 of this *Clematis* segregate is that of Moench⁴ to whom the genus should be attributed by the followers of the American and Vienna Codes. Before Linnaeus *Viticella* was used by Caesalpinus for *Clematis Flammula* Linn., by Matthaeus Sylvaticus for *Bryonia alba*, and before the time of Dodonaeus for a cucurbitaceous plant by some. The name is not a most desirable one at that in a good system of nomenclature, being a misnomer, and objectionable in the Linnaean as a diminutive form of the existing name *Vitex*. This *Viticella* as used since 1753 is, moreover, antedated by another *Viticella* Mitchell⁵, (1769) the identity of which has been variously interpreted by a number of

1 Small, J. K. Fl. S. E. U. S. (1903) p. 437.

2 Dillen, J. Hort. Eltham. (1732).

3 Dillen, J. Hort. Eltham. (1774).

4 Moench, C. Meth. Plant. p. 296, (1794).

5 Mitchell, Dr. J. Dissertatio Brevis de Prin. Botan. & Zool., cum Append. aliquot. Gen. Pl. recens cond. and in Virginia Obs. Norimbergae, impensis Wolfgangi Schwarz-Kopfii (1769), 4, 46. p. (See Pritzel 1st and 2nd editions also Kuntze, O. Rev. Gen. Pl. I, p. 519, (1893). The first edition of Mitchell's work came out in Act. Ac. Carol. 8, or Ephem. Norimb. (1748). This was, however, by the author given as follows, "Dabam ex aedibus meis Virginiae 11, 3, (1741).

authors, to be shown further on. Whatever, Mitchell's name be applied to or whether not with absolute certainty applied to any known plant heretofore, there can be no question that Moench's later application must be displaced by another even if a new one must be made. The next name in order for the *Clematis* segregate is perhaps *Sieboldia* Hoffing.¹ Of this genus *Clematis florida* Thunb. or *Clematis japonica* Thunb. should be type. Spach² who admits Moench's *Viticella* puts the former of these in that genus as *Viticella florida* DC so for this reason was *Sieboldia* Hoffing suggested here. *Sieboldia Viticella* (Linn.) or *Clematis Viticella* Linn., may therefore be put in this genus unless the type were the other plant *Clematis japonica* Thunb. or *Sieboldia japonica* (Thunb.) Hoffing. In the latter case *Sieboldia* would be but an unconditional synonym perhaps of *Clematis* itself.³

As to the identity of *Viticella* Mitchell (1748 and 1769) more than one suggestion has been made. Brand⁴ apparently unmindful that Mitchell's treatise of 1748 was also republished in 1769, and apparently on the authority of Asa Gray⁵, states that it was meant for *Hydrophyllum appendiculatum* Linn. The Index Kewensis also maintained this supposed equivalence. Brand fails to explain why *Viticella* Mitchell (1769) was not taken up by him for the much later *Decemium* Raf.⁶ (1817), unless he was unaware of the 1769 edition of Mitchell, or unless he saw that the description of Mitchell was but very questionably applicable to *Hydrophyllum appendiculatum* Linn. Comparison even superficial, of the character of this plant with Mitchell's publication of *Viticella* shows that the description not only varies much but is in many respects indeed contradictory and quite inapplicable.

Adanson⁷ in reference of course to the publication in the first edition of Mitchell's work, and likewise Boehmer⁸ consider

1 Hoffmannsegg, J. C. Preisv. Nachtr. p. 28, (1842).

2 Spach, E. Hist. Nat. Veg. 7, p. 264, (1839).

3 As I have been unable to study Hoffmannsegg's work it may be that, the other plant be the type, and in case the genus *Sieboldia* be inapplicable I suggest the name *Atrichlema* to replace *Viticella* (Dill) Moench.

4 Brand, A. Das Pflanzenreich IV, 251, p. 36, (1913).

5 "Teste A. Gray" l. c.

6 Rafinesque, C. S. Fl. Ludov. p. 34, (1817) in obs.

7 Adanson, M. Fam. des Pl. 2. pp. 226, 560, 619, (1763).

8 Boehmer, G. R. in Ludwig-Boehmer, Def. Gen. Pl. p. 27, (1760).

his *Viticella* equivalent to *Galax* Linnaeus; this probably because Linnaeus¹ himself mistakenly mentions this name in synonymy with his *Galax*. Spach² too, accepts the same opinion, all having overlooked the fact that the description of Mitchell is not at all applicable. His description can in no way be applied to the Linnaean *Galax*, the latter having only two to four segments on the calyx, while Mitchell's plant had five small lanceolate reflexed, alternating, shorter segments." More than likely it was because of these and other misrepresentations, and injustices that Mitchell's work was deemed necessary for republication in 1769, this edition being considered a protest against the disregard of Linnaeus of his first publication. Little heed was paid, however, to this latter edition, or still is, for that matter, as regards, for example, credit for publication of *Aphyllon*, *Pentstemon* and *Viticella*.

As may be readily seen by those who compare the description of Mitchell's *Viticella* here given,³ with *Galax*, or *Hydrophyllum appendiculatum*, the discrepancies are too great to favor the views of those authors already referred to. It seems, however, on studying and comparing this description that it applies very accurately to a plant then unrecorded apparently, but which in fact Mitchell may have had both at hand and in mind, when he published *Viticella* in the list of genera omitted by Linnaeus in the edition of the *Genera Plantarum* of 1737 to which it was proposed as supplement by its author. I refer to the plant called by Nuttall later, *Ellisia microcalyx*,⁴ now called *Nemophila microcalyx* (Nutt.)

1 Linnaeus, C., Sp. Pl. p. 200 (1753), p. 289 (1763).

2 Spach, E. Hist. Nat. Veg. 9, p. 444 (1840).

3 Following is the text of Mitchell's description, p. 42, l. c.

XXIV. VITICELLA, *Cal. perianthium* decaphyllum, foliolis alternis, externis brevioribus, lanceolatis, reflexis; internis longioribus lanceolatis acutis erectis.

Cor. monopetala hypocrateriformis, tubus cylindricus calyce ferme brevior; limbus planus, quinquefidus laciniis obtusis.

Stam. filamenta quinque parva, brevia, corolla adnata, *Antherae* subrotundae in collo corollae conniventes.

Pist. germen ovatum villosum. *Stylus* filiformis, semibifidus, longitudine staminum. *Stigma* subrotunda.

Per. capsula ovata, unilocularis, (bivalvis membranacea, colorata) vi elastica praedita.

Sem. duo, magna, plano-concava, ovata, dura, callosa; quasi unicum bilobum.

4 Nuttall, T. Trans. Am. Phil. Soc. N. Ser. V, p. 191 (1833 or 1837).

Fisch & May,¹ and called by Muhlenberg *Hydrophyllum pusillum* according to Nuttall. This plant is reported from Virginia on the authority of Gray.² The name *Viticella* would then seem an older and valid one for the genus *Nemophila* Nuttall³ as typified in this case by *N.* or *V. microcalyx*. The name would then supplant *Nemophila* which it antedates by more than fifty years.

TRIORCHOS.

The name *Triorchos* Small and Nash⁴ is so much like *Triorchis* Petiver-Millan⁵ both in sound and even ultimate derivation that it becomes a homonym. I suggest that *Smallia* take its place.

Dept. of Botany,
Notre Dame, Ind.

Our Birds in the Winter of 1912-13.

BY BROTHER ALPHONSUS, C. S. C.

In December, the temperature remained above freezing point until the 7th, but after that date it was generally below 32°. The records in this article begin on the above date. Throughout the winter there were days when the weather was exceedingly mild, a fact that would account for the presence of certain species that I had not observed before in any winter. Such were the Northern Shrike and Herring Gull. In March, the weather was cold up to the 8th, when the temperature rose to 38°; and the next day the first Robins appeared. This date marked the end of winter.

In December, the Blue Jay was present on 10 days, with the longest interval of 11 days. In January, it was seen on 15 days, with the short interval of 2 days. In February, it was observed on 9 days, the longest interval being 5 days. In March, there were but two records, with an interval of 6 days.

1 Fisch and Mey. Sert. Petropol. t. 8, (1846).

2 Gray, A. Man. Bot. N. U. S. p. 327 (1858. "*Rich moist woods Virginia near Washington*) and southward.

3 Nuttall, T. Jr. Phil. Acad. 2, p. 179 (1822).

4 Small, J. K. Fl. S. E. U. S. p. 329 (1903).

5 Petiver-Millan Op. Hist. Nat. Spect. II. (1764) *Gazophyllacium*, t. 68, 7. See Am. Mid. Nat. III. p. 122, (1913).

In December, the Snowbird was observed on 12 days, with the greatest interval of 8 days. In January, it was seen on 10 days, the longest interval being 5 days. In February, it was present on 12 days, with 8 days as the longest number absent. In March, it was seen on 6 days, with only an interval of 1 day.

Last winter the Snowbird was not recorded between Jan. 29 and Mar. 20—50 days. From this fact the writer concluded that the species had migrated for this period. During the present winter the Snowbird was observed from Jan. 22 to Mar. 11—47 days—only in the vicinity of a certain dump-pile. If the writer had not visited this place, he would naturally have surmised that the species had left this locality. Instead of a migration, then, there was a very restricted distribution of the species. But he still believes that the Snowbird migrated last winter, for he failed to find any of the species near the same dump-pile.

In December, the Crow was observed on 7 days, the longest interval being 9 days. In January, it was present on 25 days, and the longest absence was 7 days. In February, the species was seen on 20 days, with a short interval of 3 days. In March, 5 days present and an interval of 2 days was the record. The Crow is the most widely distributed species in winter: this season it was observed on 57 days.

In December, the White-breasted Nuthatch was present on 10 days, with the longest interval also 10 days. In January, the species was recorded on 12 days, and the longest absence was 7 days. In February, 17 days present and a short interval of 2 days was the record made. In March, the species was seen on 3 days, and not seen for 5 days. Next to the Crow, the White-breasted Nuthatch is our most abundant winter species—42 days present this season.

Among rare species observed this winter were the Song Sparrow, Hairy Woodpecker, Chickadee and Northern Shrike. During four winters, the last named species was observed only on the dates given in this article. The Song Sparrow was found only on Dec. 2, 1911 and Dec. 14, 1912. The Chickadee was recorded only on Feb. 11, 18, 1911 and on the dates given below. The Hairy Woodpecker was found only on Mar. 2, 1912 and Jan. 11, 1913.

Other species are comparatively rare also, but appear with more regularity. These are the Brown Creeper, Tree Sparrow and Snowflake. This winter the Creeper was recorded twice in Decem-

ber and once in February. Last winter this species was seen on 7 days in December and once in February. In the winter of 1911-12, the Tree Sparrow appeared as follows: Dec. 1, 25; Jan. 31; Feb. 15 to 18, 20, 23, 24, 27, 28; Mar. 1. The Snowflake was recorded on Jan. 16, 1911; Mar. 2, 3, 1912.

The Downy Woodpecker is the only species that is neither very rare or very common in winter. In December, it was seen on 4 days, with three intervals of 6 days and one of 7 days. In January, the species was found on 6 days, with two long intervals of 8 days and several short intervals. In February, this woodpecker was present only on 3 days, with the longest interval of 14 days. In March, the only record was on the 8th.

Two records worthy of comment were the Herring Gull on Jan. 17 and the Bluebird on Feb. 19. This was the first time in winter that the writer observed the Herring Gull in the vicinity of small inland lakes. The Bluebird has been seen before in winter, but not with such a long interval between the first and second observations. This year the first record of the species was made on Feb. 19 and the second on Mar. 11—an absence of 19 days. On Feb. 19 the temperature rose to 60°, but was followed by cold, stormy days for about two weeks.

Species not seen this winter: Goldfinch, Screech Owl, Evening Grosbeak, Hell Diver, Bobwhite, Cardinal, Sparrow Hawk, Redpoll, Robin.

DECEMBER.

Birds seen on the dates after their names:

Blue Jay 7, 8, 9, 12, 14, 16 to 19,	Chickadee 8, 9, 10, 11, 13.
31.	Snowbird 7, 8, 9, 11, 14, 15, 16,
Crow 7, 14, 15, 16, 26, 27, 31.	17, 18, 20, 29, 31.
Song Sparrow, 14.	Downy Woodpecker, 7, 14, 21, 23
White-breasted Nuthatch 11, 14,	Brown Creeper, 18, 19.
17, 18, 19, 20, 24, 25, 26, 31.	Northern Shrike, 7.

Total number of species seen, 9.

JANUARY.

Birds seen on the dates after their names:

Blue Jay, 1, 4, 5, 7, 8, 9, 11, 13,	Snowbird, 7, 9, 15, 21, 22, 24,
15, 17, 18, 21, 22, 25, 26, 28.	28, 29, 30, 31.
Crow, 1, 2, 4 to 9, 11, 12, 13,	Downy Woodpecker, 4, 13, 17,
17, 18, 19, 21 to 29, 31.	20, 21, 22,

White-breasted Nuthatch 1, 9, 10 Tree Sparrow, 22, 24.
 11, 13, 17, 18, 19, 22, 24, 26, 29. Snowflake, 8.
 Hairy Woodpecker, 11. Herring Gull, 17.
 Total number of species seen, 9.

FEBRUARY.

Birds seen on the dates after their names:

Blue Jay, 1, 3, 9, 11, 17, 18, 20, Snowbird, 1, 2, 3, 6, 7, 8, 11,
 24, 28. 13, 16, 17, 18, 27.
 Crow, 1 to 5, 7, 8, 9, 11, 13, 14, Downy Woodpecker, 3, 18, 25.
 15, 17, 19, 20, 21, 24, 25, 27, 28. White-breasted Nuthatch, 1, 3,
 Tree Sparrow, 16. 6, 8, 11 to 14, 16, 17, 19, 20,
 Snowflake, 2, 4, 5. 22, 24, 25, 27, 28.
 Northern Shrike, 15. Bluebird, 19. Brown Creeper, 24.
 Total number of species seen, 10.

MARCH.

Birds seen on the dates after their names:

Blue Jay, 1, 8. Snowbird, 2, 3, 4, 6, 7, 8.
 Crow, 1, 4, 5, 7, 8. Downy Woodpecker, 8.
 White-breasted Nuthatch, 6, 7, 8 Tree Sparrow, 3, 4, 8.
 Total number of species seen, 6.
 Total number of species seen during the winter, 15.

Comparative Migration of Our Birds in Spring.

BY BROTHER ALPHONSUS, C. S. C.

In the first three years, 7 days were the greatest difference between the earliest and latest arrival of the Bluebird. In 1912, the date given, I think, was not the correct one; for I heard that the species had been seen sooner by other observers. Although I admit that my record was likely later than the true date of migration, still the fact that I did not observe the species until that date indicates that the very cold weather of early spring was the cause of the great scarcity of the Bluebird until late in March.

In the four years of our comparison, the greatest difference between the earliest and latest arrival of the Robin was 17 days. The fourth year being the one in which this species was 10 days later than in 1910, and 12 days later than in 1909, the usual time

for the Robin to arrive may be set down as the first or second week in March.

The Meadowlark shows as its usual time for arriving in spring the same as that of the Robin, with one late date in 1912. The late arrival in 1912 of all the early spring migrants clearly shows that cold weather is a determining cause of the delay of migrating birds in spring.

The Song Sparrow is quite regular in its time of arrival in spring, the first or second week in March, under usual conditions, always marking its advent. The observer is always sure of his date of migration when referring to this species, for it announces its presence on the very first day of arriving by its well-known song.

The Purple Grackle and Killdeer are two more species that are among the early March migrants, but like the species already mentioned, they will not brave cold weather in order to keep to this regular time of arriving.

The Mourning Dove usually arrives late in March, 15 days being the greatest difference in its time of arriving in the four years under comparison. The first three years show that this species may be looked for either in the third or fourth week in March.

In the Kingfisher, we have a species that shows 17 days as the greatest number between its earliest and latest arrival. The dates of the four years are so distributed as to establish the fact that this migrant may arrive either in the third or fourth week in March, or in the first or second week in April. The observer is quite sure of his dates in speaking of the Kingfisher, for the size of the bird and its aquatic habits make it unlikely that the species will not be seen on the first day of its arrival.

The Phoebe's dates for the four years mark the time of arrival for this species to be the last week in March or the first week in April. The Golden crowned Kinglet also arrived two years in the last week in March and two years in the first week in April.

The Cowbird showed one irregularity in arriving as early as March 16, 1910, while the other three years each give the first week in April as the usual time of migrating. This March date was 17 days sooner than the earliest date in April. Who can give a satisfactory explanation of this irregularity?

In the case of the Vesper Sparrow and the Flicker, the dates

show that these species usually arrive in the first week in April and move rarely in the last week in March. On the other hand, the Field Sparrow arrived three years in the last week in March and one year in the first week in April.

The Chipping Sparrow shows irregularity in the two dates in April—the first and the second weeks; but in March both dates are in the last week. In April, the Sapsucker shows great regularity, arriving three years in the second week; the one irregular date was in the last week in March.

The Hermit Thrush arrived two years in the first week in April and two years in the second week, 9 days being the difference between the earliest and latest date. The Brown Thrasher shows a little less irregularity, arriving three years in the third week in April, and having 7 days between the earliest and latest date.

The Purple Finch, in the two years that the bird made its appearance, shows regularity in its dates of arrival; there being but 5 days between the two dates.

The Towhee presents a case of great irregularity in migrating, there being no two years when the bird arrived in the same week. The greatest difference in the dates was 29 days.

The Barn Swallow came one year in the second week in April, another year in the third week, and in the remaining two years in the fourth week, the greatest difference between the earliest and latest date being 14 days.

The Red-headed Woodpecker shows the greatest disparity in its dates of migration of any species under consideration, 39 days being the difference between the earliest and latest date of arrival. The four dates are variously distributed in the third week, in March, first, second and fourth weeks in April.

The Red-winged Blackbird's dates present great differences, but I am sure that the date for 1909—April 20—can not have been the correct time of arrival. This species is usually found only in swampy places and unless such a place is visited, the observer may not see the bird until long after its arrival. The true time of migration for the Red-wing must, therefore, be set down as the first or second week in March.

The dates found in the four years show for the Myrtle Warbler a migration period of 16 days, and make the time of arrival as early as the third week in April and as late as the first week in May. The Ruby crowned Kinglet is still more irregular, with 22

days as the greatest difference in the earliest and latest dates of migration. The second and fourth weeks in April and the first week in May were the times of arrival for this species.

The Cardinal is really not a migrating species, but is very locally distributed at every season of the year, especially in winter. Unless the observer visits a river or swamp, he may fail to find a single individual for months together. During the spring of 1913, I heard the Cardinal's note only on one occasion—when I went to the St. Joseph River early in May.

The House Wren, Yellow Palm Warbler, Chimney Swift, Yellow Warbler, Baltimore Oriole, Rose-breasted Grosbeak, Warbling Vireo, Orchard Oriole, Kingbird, Black-throated Blue Warbler, Catbird, Bobolink, Purple Martin, Bay-breasted Warbler, Canadian Warbler, Least Flycatcher, Red-eyed Vireo, Cedarbird and Yellow-billed Cuckoo—all show regularity in their dates of migration, there being not more than 8 days between the earliest and latest date of arrival.

The Indigo Bird arrived, in the four years, in the first, second and third weeks of May, with the greatest difference 12 days. The Maryland Yellowthroat arrived in the second and fourth weeks of May. The Redstart came the last week in April and the first and second weeks in May, with 17 days between the earliest and latest date.

The Dickcissel arrived two years in the second week in May and one year in the third week, no record of the species having been made at any time in 1912. This bird, like the Purple Finch, does not appear some years.

The Nighthawk and Whip-poor-will show irregularity in their times of migration. In the case of the latter species, however, I think my dates are not correct; for my observations in spring were made in woods near a town, which this migrant does not enter, except rarely. I should put the true time of arrival, from what reports I have heard, as the first week in May.

	1909	1910	1911	1912
Bluebird	Mar. 1	Feb. 22	Feb. 23	Mar. 25
Robin	" 2	Mar. 4	" 25	" 14
Meadowlark	" 5	" 6	Mar. 9	" 19
Song Sparrow	" 6	" 5	" 9	" 22
Purple Grackle	" 7	" 6	" 9	" 19

	1909	1910	1911	1912
Killdeer	Mar. 9	Mar. 4	Mar. 9	Mar. 14
Mourning Dove	" 19	" 28	" 24	Apr. 3
Kingfisher	Apr. 3	" 30	" 22	" 8
Phoebe	" 3	" 29	" 22	" 2
Cowbird	" 5	" 16	Apr. 2	" 6
Vesper Sparrow	" 5	" 26	" 9	" 1
Flicker	" 5	" 24	" 5	" 10
Field Sparrow	" 6	" 25	Mar. 21	Mar. 31
Golden-crowned Kinglet	" 7	" 30	" 22	Apr. 6
Chipping Sparrow	" 10	" 29	" 30	" 5
Sapsucker	" 11	" 26	Apr. 11	" 12
Hermit Thrush	" 13	Apr. 4	" 11	" 5
Purple Finch	" 14		" 9	
Brown Thrasher	" 17	" 10	" 16	" 15
Towhee	" 17	Mar. 19	" 8	" 2
Hell Diver	" 19	" 31	" 27	
Barn Swallow	" 19	Apr. 27	" 26	" 13
Red-headed Woodpecker	" 20	" 4	Mar. 18	" 26
Red-winged Blackbird	" 20	Mar. 5	" 9	" 2
Myrtle Warbler	" 20	May. 2	Apr. 26	" 16
Cardinal	" 20	Apr. 7	May 7	Mar. 18
Ruby-crowned Kinglet	" 22	" 10	Apr. 25	May 2
House Wren	" 23	" 28	" 29	" 3
Yellow Palm Warbler	" 26	May 3	" 30	" 5
White-crowned Sparrow	" 27			
Chimney Swift	May 3	" 8	May 3	" 1
Wilson's Thrush	" 3			
Yellow Warbler	" 5	" 2	Apr. 27	May 3
Baltimore Oriole	" 5	" 2	May 3	" 2
Rose-breasted Grosbeak	" 5	" 8		" 13
Indigo Bird	" 5	" 17	May 17	" 14
Warbling Vireo	" 6	" 3	Apr. 30	Apr. 30
Orchard Oriole	" 7	" 10	May 8	May 4
Kingbird	" 8	" 4	Apr. 30	" 2
Black-throated Blue Warbler	" 9			" 4
Goldfinch	" 11	Apr. 2	Apr. 6	Mar. 21
Catbird	" 7	May 7	May 2	May 2
Maryland Yellowthroat	" 11	" 11	Apr. 27	
Redstart	" 12	" 4	" 25	May 3

	1909	1910	1911	1912
Bobolink	May 13	May 14	May 7	May 13
Purple Martin	" 13	" 8	" 7	
Blackburnian Warbler	" 13			May 3
Scarlet Tanager	" 19	May 10	May 15	" 2
Bay-breasted Warbler	" 19	" 16		" 13
Dickcissel	" 19	" 12	May 10	
Least Flycatcher	" 22	" 14		May 22
Canadian Warbler	" 24			" 19
Tennessee Warbler	" 24			" 3
Wood Pewee	*	May 20	May 10	May 6
Crested Flycatcher	May 27	May 10	May 10	" 6
Nighthawk		June 3	May 1	" 19
Yellow-throated Vireo		May 4		" 19
Red-eyed Vireo	*	" 21	May 17	May 19
Warbling Vireo	*	" 3	Apr. 30	Apr. 30
Alder Flycatcher	May 25	" 12	May 28	May 20
Least Flycatcher	" 22	" 18		May 22
Cedarbird	" 27	June 1	May 31	" 24
Whip-poor-will		" 15	May 8	" 26
Yellow-billed Cuckoo	May 28	May 30	" 20	" 27

* Record lost.

Linnaea americana in Indiana.

Linnaea americana Forbes is regarded a decidedly more northern plant than would be expected in our flora. Its presence in a bog at the lower end of Lake Michigan near Mineral Springs (Porter Co.), where I found it this fall, may be accounted for by the fact that the prevailing cold winds from the north that built the dunes make the region somewhat boreal. Other more northern plants associated with it are *Cornus canadensis* Linn. and *Thuja occidentalis* Linn. Of the latter there are still some trees over twelve inches in diameter, and a rather good growth of saplings.

For *Apocynum tomentellum* Nwd. Am. Mid Nat. III., p. 55, substitute *Apocynum tomentosum*. There was another plant of that name, Greene E. L. Leaflets etc. Vol. I. p. 58.

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that of the Prairie States

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

CONTENTS

- In the Woods *Walter Louis Hahn, Ph. D.* 167
- Critical Notes on New and Old Genera of Plants.—I.
J. A. Nieuwland 170
- Priority of Hierochloa *R. M. Kaczmarek* 198
- Notes on Cleistogamous Flowers of Violets.—II.
J. A. Nieuwland 198
- Polygonum Longistylum* Small, A Synonym *J. A. Nieuwland* 200
- Our Birds in the Spring of 1913 *Brother Alphonsus, C. S. C.* 201

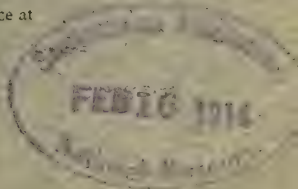
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JANUARY, 1914.

NO. 7.

IN THE WOODS.

How the Wild Creatures are Spending the Winter.

BY WALTER LOUIS HAHN, PH. D.*

This is the season when the size of a man's bank account is most apt to determine his location. For in summer practically every one spends much of his time out of doors even though he may not go to Newport or Lenox. But in winter it is only the rich man who can escape the inclemency of the weather by taking a southern journey.

* "On May 31, 1911, a distressing accident occurred on St. Paul Island. Dr. Harry D. Chichester, assistant agent, and Dr. Walter L. Hahn, the naturalist on the seal islands, with their wives and a native, Neon Tetof, while sailing on the lagoon were unable to put about successfully in the high wind and by the capsizing of their boat were exposed to the ice-cold water for more than an hour. All were alive when rescued, and Mrs. Chichester and Mrs. Hahn, by the diligent efforts of the physician, were resuscitated. The native also survived, but Dr. Chichester and Dr. Hahn, necessarily left without medical attention for a time, succumbed to the effects of the exposure."

"Dr. Hahn entered upon his duties as naturalist in the fall of 1910. His training, wide field experience, and well-known ability and enthusiasm as a zoologist and practical business man were assurance that his appointment to the position of naturalist, just established, would prove a wise selection. His report, written up to the very day of his death, shows that he possessed a remarkably clear understanding of the problems with which he had to deal. Arriving at the islands August 23, 1910, he made daily observation and study of the seals and foxes throughout the fall, winter, and spring. He also gave attention to the birds and other animals on and about the islands, to the plants, and to meteorological phenomena, and gave much thought to the local educational problems and the intellectual and moral well-being of the natives, working out a system of education such as he believed best adapted to their needs."

* Report, *Alaska Fish and Fur Ind.* p. 90., (1912).

And while the members of the human family are either discussing the merits of Palm Beach and Ormond or else wondering how the coal bill is going to be met, the members of Nature's big family are also devising ways and means of spending the winter.

The birds are the aristocrats of the animal kingdom and they alone can afford to spend the winter under genial southern skies. But even some of their number must remain to look after business and they are not all the poor cousins either, if one may judge by appearances, for along with the sparrows and the somber colored Juncos who are holding a carnival among the briars, may be seen the scarlet crest of the Red-bird and the royal blue of the Jay.

Down in the woods in the whiteness of the winter midnight, the rabbits, those happy-go-lucky children of Nature's family, are having a feast and their choicest viands are the stems of the wild Hydrangea and the Arrow-wood, served with garnishings of ferns and a relish of sassafras. Little does Bunny care for cold or snow. But other dangers are abroad and sensitive nostrils warn him just in time that the cut-throat mink is near. He dashes away in terror, his hind legs over-reaching his front ones in his haste and leaving their imprints foremost in the snow.

The mink starts to follow but is unequal to the pace and turns his attention to smaller game. As he leaves the woods and crosses a field a little tunnel in the snow catches his eye. Can that be made by a mouse? he thinks, as he stops and sniffs at the snow, thrusts his nose into it and sniffs again. No! it was only a tiny shrew whose body is scarcely larger than a lady's thumb, besides it has some glands which give it an unsavory taste and smell and so the mink trots on still looking for signs of prey.

Here is another mark to be examined. The foot-prints are in pairs and there is a curious little streak in the snow behind them. That streak must be the mark of a tail and so these tracks could have been made only by a white-footed mouse for no other creature with feet so small and a tail so long is abroad on these cold winter nights. He would make a dainty morsel for a hungry mink but he has gone under that old stump and there he is safe for tonight.

Over in the woods on the other side of the field the snow

is thrown up and broken in a broad irregular line which shows that the earth under it is also upheaved. That must be the work of the pine mouse and here in the woods where the leaves are thick the ground is mellow and unfrozen and he should not be hard to catch. The mink waits only to make certain where the mouse has stopped, then as he sees the snow crust moving, he leaps to the spot, his paws work like lightning, and in an instant his teeth close upon the helpless victim. The warm blood tastes good and he would be content with that if food were plentiful but now after a three days fast the flesh can not be wasted and so the mouse is quickly devoured.

But we can not continue to follow the fortunes of the mink for there are other things of interest in the woods. The brook, too, contains a variety of animal life. The Johnny Darter and the Miller's Thumb dart through its swift current searching for food even though the waters be cold and their distant relatives, the cat-fish and the carp, may be lying torpid in the mud at the bottom of the river.

Under the rocks the larvae of the stone flies are hiding, together with leeches, sow-bugs and a host of other creatures. The dobson, choicest of bait for the black bass, is also here and those black lumps that seem to be glued to the rocks are water snails. Both they and the cray-fish which live here in the stream can remain active in the coldest weather when their relatives on the dry land must close their doors and stay in winter quarters.

Tadpoles swim about in the quiet pools which remain unfrozen but bury themselves in the mud as soon as ice begins to form. Their parents, the frogs, are hidden under the thick carpet of leaves which covers the floor of the forest or else they too are buried in the muddy bottoms of the ponds so deeply that the frost can not reach them but not so deeply that a week of warm weather will not bring them croaking into activity.

The animals with the long slender bodies that dart about and hide beneath the rocks are young salamanders, first cousins of the frogs. When they become fully grown they will leave the water and make their homes under rocks and decaying logs in the woods and fields. Most people who see them then will call them lizards but young lizards do not live in the water and they have scales like a snake instead of a soft moist skin such as the salamanders always have.

The strangest freaks in all of Nature's family are the insects. Last summer we saw myriads of moths, butterflies, beetles, gnats and countless other insects. Today as I walked through the woods the only insect I saw was a mosquito driven from its winter home in a hollow tree and walking stiffly about on the snow. Some of the others which last summer filled night and day with their incessant humming are also hidden away in hollow logs, under bark, in the caves, among the dead leaves—anywhere that will furnish sufficient room for a hiding place. They may be frozen stiff now but when the spring sun sends its reviving warmth into their retreats, life will flow through their bodies and they will be active once more. However, you might examine the whole world with a microscope and you would not find a single animal resembling some of those which were so abundant last summer. Has the whole race been killed? And is it to be numbered with those that have disappeared in the long gone geological ages? Wait and see. Nature is not so careless with her children. If the adult members of a species can not stand the rigors of winter, then other means for preserving the race must be provided. Somewhere, hidden away safely in a protected nook are some tiny eggs, the sole representatives of their species and when warm weather comes again these eggs will hatch and the bugs and butterflies, the caterpillars and moths, and the gnats and wasps will be as abundant as in former years.

CRITICAL NOTES ON NEW AND OLD GENERA OF PLANTS.—I.

BY J. A. NIEUWLAND.

GONOPYRUM A HOMONYM.

The name *Gonopyrum* F. and M. (1840)¹ is a homonym as there was an older *Gonopyros* Raf.,² (1828). The latter name differs from the other only in gender form of the word, and therefore reduces the other to synonymy according to the code rules.

1 Fischer and Meyer ex C. A. Meyer in Mem. Acad. Petersb. Ser. VI., VI., p. 144, (1840).

2 Rafinesque C. S. Med. Fl. I., p. 155, (1828).

3 Michaux, A., Fl. Bor. Am. II., p. 240, (1803).

Moreover, the group of plants to which the name *Gonopyrum* F. and M. was given is not simply a synonym to the *Polygonella* Michx.³ but a real segregate of distinct plants. The genus differs from *Polygonella* by notable characters such as perfect flowers and lateral embryo, shape of calyx, whereas those of the latter are polygamo-dioicous and have an axillary embryo. The flowers are very different in the two groups. The *Gonopyros* Raf. is a proposed segregated genus of *Diospyros* Linn. To replace the invalidated *Gonopyrum* F. and M. we suggest the name *Psammogonum*.

Psammogonum Nwd. nom. nov.

Gonopyrum F. and M. 1840 not *Gonopyros* Raf. 1828.

Psammogonum americanum (F. and M.) Nwd.

Gonopyrum americanum F. and M. l. c.

Polygonella ericoides Engelm. and Gray. Bost. Jr. Nat. Hist.

V, p. 230, (1845).

Polygonella americana Small, Mem. Torr. Bot. Cl. V. p. 141, (1894).

Psammogonum articulatum (Linn.) Nwd.

Gonopynum articulatum (Linn.) F. and M. l. c.

Polygonella articulata (Linn.) Meisn. Gen. 2, p. 228, (1836-42).

Polygonum articulatum Linn., Sp. Pl. p. 363, (1753).

DELPHINIUM.

The type of the genus *Delphinium*, whether we refer the genus to Linnaeus, as many now do, or more correctly to the ancients, is not *Delphinium Consolida* Linn. as Dr. Britton would intimate but rather *Delphinium peregrinum* Linn. This plant and its nearest allies of the same group *D. Consolida*, *D. Ajacis*¹ Linn. differ from the other members of the aggregation now commonly called by the name *Delphinium*, so markedly that we can scarcely restrain our wonder that systematists should call this a genus. *D. Consolida* and its allies have but one follicle in fruit, the others have three; it has, moreover, the petals united into two sets and with its ally, is an annual; our native plants have separate petals and are perennials, whereas the petals of *D. Consolida* and *D. Ajacis* are very conspicuously united. One might as reasonably have included species of *Aconitum* in this miscellaneous modern *Del-*

¹ Gray, S. F. Nat. An. Br. Pl. II., p. 711, (1821).

phinium as put together such plants as are here commented on. There are other differences almost as important, and we have not the slightest hesitancy of admitting these, as generically characteristic, and proposing that such heterogenous mixtures of widely different types be separated.

A name of the group of perennials with three-follicled fruit given by Spach, is *Delphinastrum*,¹ not a desirable one as the ending *astrum* indicates the wild condition of a plant, and is built on a previously existing plant name. *Staphisagria* Spach² as also his *Phledinium*³ are perhaps sufficiently different from either of the above to merit recognition as genera. *Delphidium*⁴ Raf., another name was proposed earlier than any by Rafinesque, but was unfortunately made without description and even designation of type and is scarcely more than a *nomen nudum*. Some of the transposed plants under *Delphinastrum* Spach are:

DELPHINASTRUM Spach l. c.

Type *Delphinium grandiflorum* Linn.

Delphinastrum exaltatum (Ait.)

Delphinium exaltum Ait. Hort. Kew. 2. p. 244, (1789).

Delphinastrum Treleasei (Bush.)

Delphinium Treleasei Bush; Davis, Minn. Bot. Stud, 2, p. 444, (1900).

Delphinastrum Nelsoni (Greene).

Delphinium Nelsoni Greene, Pitt. 3, p. 92, (1896).

Delphinastrum carolinianum (Walt).

Delphinium carolinianum Walt. Fl. Car. p. 155, (1788).

Delphinastrum virescens (Nutt.).

Delphinium virescens Nutt. Gen. 2. p. 14, (1818).

Delphinastrum tricornе (Michx.).

Delphinium tricornе Michx. Fl. Bot. Am. I., p. 318, (1893).

Other plants to be transferred are:

Delphinastrum Menziesii (D. C.), *leucophaeum* (Greene), *distichum* (Geyer), *Andersoni* (Gray), *nuttallianum* (Pritz.), *glaucum* (Watson), *occidentale* (Watson), *trollifolium* (Gray), *nudicaule*

1 Spach, E., Hist. Nat. Veg. VII., p. 336, (1839).

2 Spach, L. C., p. 347.

3 Spach l. c. p., 351.

4 Rafinesque C. S. Am. Month. Mag. p. 356, (1811).

(T. and G.), *vimineum* (D. Don.), *urceolatum* (Jacq.), etc., etc. *Delphinia* of authors quoted.

DELPHINIUM (Dioscorides) Linn. Sp. Pl. p. 536, (1753).¹

Phledinium Spach. l. c. p. 351.

Delphinium peregrinum Linn. l. c. p. 531.²

Phledinium peregrinum (Linn.) Spach. l. c.

Type of the genus *Delphinium* stricto (sensu.)

CONSOLIDA (Brunfels) S. F. Gray,³ l. c.

Delphinium Spach. l. c. stricto sensu, not of Linn.,^f or only in part.

Consolida regalis (Brunfels) S. F. Gray, l. c.

Delphinium Consolida Linn., Sp. Pl. p. 530, (1753). Type of the genus *Consolida*.

Consolida Ajacis (Linn.).

Delphinium Ajacis Linn. l. c. p. 531.

Consolida Ajacei Schur., in Verh. Siebenb. Ver. Naturw. IV., p. 47, (1853).

ANEMONANTHAEA S. F. Gray.

The group of plants now usually included in the genus *Anemone*, but not having hairy achenes, typified by *Anemone nemorosa* Linn., were segregated by S. F. Gray as the genus

1 The name *Phtirium* Raf. is an absolute synonym of *Delphinium*, Latin name for the Dolphin.

2 The plant was first named by Dioscorides, a Greek, who lived in Italy in the first century. *D. Consolida* and *D. Ajacis* the plants made typical of *Delphinium* by Dr. Britton grow in Europe, Orient, and northern Asia. Linnaeus never designated types and it is worse than useless to accept the first named species of his genera as type of the genus without consulting the other authors from whom Linnaeus took the names he used. Types of his genera can only be determined in many cases by a careful study of the older authors. See Britton, N. L., Ill. Fl. N. Am. II. p. 93, (1913). The native *Delphinium* of Italy is *D. peregrinum* and is more probably the plant of Dioscorides, though *D. Consolida* may have been known to him as the second species mentioned in his work. See Daubeny C., Lectures on Roman Husbandry, (Oxford), p. 236, (1857) also Fée, A. L. A. Flore de Théocrite, p. 102, (1832), also his Flore de Vergile, p. 67, (1822). Also Fraas, Flora Classica, Sibthorp in his Flora Graeca, I. p. 370-371 says that the *Delphinium* of Dioscorides is *Delphinium peregrinum* Linn. and that the second species mentioned in his Materia Medica or the *Δελφίνιον ἑτέρον* Diosc is *Delphinium Consolida* Linn.

3 S. F. Gray l. c.

Anemonanthea. The group doubtless deserves recognition for reasons as valid as some of the segregates lately made. Because of the resemblance in fruit these plants were by pre-Linnaean authors first referred to *Ranunculus*¹ rather than to *Anemone* proper. Following are some of the eastern American allies as also one of the Pacific coast:

ANEMONANTHAEA (DC.) S. F. Gray, Nat. Arr. Br. Pl. II, p. 724, (1822).

Ancmanthus Fourr. Ann. Soc. Linn. Lyon. N. S., XVI., p. 323, (1868).

Anemonanthea trifolia (Linn.).

Anemone trifolia Linn., Sp. Pl. p. 540, (1753).

Anemonanthea quinquefolia (Linn.).

Anemonanthea quinquefolia Linn. l. c. p. 541.

CORNIVEUM.

The plant represented from the northwestern United States as *Dicentra uniflora* Kellog, or *Bicuculla uniflora*, (Kellog) Howell has floral structure and other very important characters quite different from our eastern *Bicuculla* or *Dicentra Cucullaria*, and *canadensis*. Though externally the flowers may appear somewhat like these, more careful examination shows them to be at least as different as the so-called Californian *Bicucullas* such as *B. chrysantha* (Blanche) and *B. ochroleuca* (Engelm), and *Adlumia* itself, which have been segregated into new genera. The vegetative habit of the plant too is noticeably different.

The sepals of *Bicuculla uniflora* are quite large, nearly if not half as long as the corolla. The outer petals saccate at the base are reflexed in anthesis below the middle by a long carinate tip. The inner petals, not crested are different in shape from any corresponding parts in any of this group of plants, and more notably modified than those of the other well accepted genera of *Fumariaceae*. They are arrow or halbred-shaped with a long narrow claw extending nearly to the middle and at least beyond one-third their length. Their apex is somewhat spoon-shaped but crestless. The stamens are somewhat united under the inner petals, the two lateral apparently the upper one-third of their length in pairs, the other two are long recurved into the saccate

¹ See Parkinson, J. *Paradisus Terrestris*, (1623).

parts of the outer petals. The stigma is apparently 2 cleft, each part again slightly divided into two small lobes. The pistil is ovoid and bears the remainder of the withered persistent corolla as in the yellow Californian allies, and in *Adlumia*, and this is a notable character in these segregated recognized genera.

As to the vegetable characters of habit, the plant bears at its base which is buried deep in the ground a cluster of fusiform tuberous roots above which are found in membranous leaf-scales which cormlets or bulblets. The plant therefore appears to use the latter only for propagation and the tuberous roots for food storage. The scape and leaf petioles are buried under ground $\frac{1}{2}$ - $\frac{3}{4}$ of their length and the subterranean parts covered with outgrowths like root-hairs which seem to serve the function of absorbing moisture like roots. This last character is notable in a plant which is not only essentially glabrous itself, but shares that character with the whole group.

Corniveum nov. gen.

Planta glabra vel glauca perennis acaulis e radicibus fusiformibus tuberosis oriens, foliis ternatis dissectis, petiolis et scapo subteranneis, $\frac{1}{2}$ vel $\frac{2}{3}$ longitudinis, et sub solo pubescentibus. Fructus ovoidus cum stylo filiformi et stigmate diviso, corollam marcescentem ferente; staminibus sex, binis lateralibus sub aequilongis, $\frac{1}{3}$ longitudinis supra unitis et duobus in calcar retro projectis vel incurvatis, omnibus plus minusve ad summum unitis; petalis exterioribus semicordatis apice longe recurvatis, petalis interioribus hastatis unguiculatis, minime cristatis, apice rotundato (unguis fere dimidio totius partis longus), scapo bracteato, flore nutante sed floescente erecto, 1.3-2.5 cm. longo.

Corniveum uniflorum (Kellog.) Nwd.

Dicentra uniflora Kellog.¹

Cicuculla uniflora (Kellog) Howell.²

Despeleza nov. gen.

The type species of the genus *Lespedeza* Michx. is *L. virginica*. There is another group of plants which has hitherto been associated with this genus usually, but which has characters as a group warranting separation therefrom. The absence or

¹ Kellog, in Proc. Calif. Acad. IV., p. 141, (1871).

² *Dicentra uniflora*, Kell. Proc. Cal. Acad. Sci. IV., p. 141, (1903).

presence of cleistogamous flowers has apparently become recognized as a character sufficient to merit generic standing. Besides this the plants of which *Lespedeza hirta* (Linn.) Hornem. may be selected as typical, have in common other important characters. Their flowers unlike those of *Lespedeza* proper, are whitish or yellowish, and usually characteristically aggregated in only terminal or subterminal spike-like racemes, and the calyx segments exceed or include the fruit, whereas the typical plants beside having cleistogamous axillary and loosely aggregated purplish flowers, have their fruit longer than the calyx segments. We may designate the group devoid of cleistogamous flowers as a new genus **Despeleza**.

Crocanthemum Spach, in the *Cistaceae* recognized of late as a good genus can be said to have scarcely much else but the presence of cleistogamous flowers to validate its generic standing as separate from *Helianthemum* and especially from *Halimium*.

DESPELEZA nov. gen.

Lespedeza Michx. Fl. Bor. Am. II. p. 71, (1803), segregate.

Plantae perennes, stricte erectae, plus minusve e basi ramosae, plerumque etiam infime suffruticosae, floribus, albis, albescentibus vel flavescentibus, calice fructum superante, floribus cleistogamis omnino absentibus (*i. e.* tantum petaliferis perfectos habentibus); floribus in inflorescentia terminali spicato-racemosa aggregatis.

Plants perennial, strictly erect, often more or less branched from the base, somewhat suffruticose below. Flowers whitish or yellowish; calyx segments surpassing the fruit: cleistogamous flowers absent, inflorescence spicate-racemose terminal or subterminal.

Despeleza hirta (Linn.) Nwd.

Lespedeza hirta (Linn.) Hornem. Hort. Harn. p. 699, (1807).

Hedysarum hirtum Linn., Sp. Pl. p. 748, (1753). Type.

Despeleza capitata (Michx.) Nwd.

Lespedeza capitata Michx. Fl. Bor. Am. II., p. 71, (1803).

Despeleza angustifolia (Pursh) Nwd.

Lespedeza angustifolia (Pursh) Ell. Bot. S. C. and Ga. II., p. 206, (1824).

Lespedeza capitata var. *angustifolia* Pursh, Fl. Am. Sept. p. 480, (1814).

Despeleza leptostachya (Engelm.) Nwd.

Lespedeza leptostachya Engelm. A. Gray. Proc. Am. Acad.

XI., p. 57, (1876).

HYPOGON Raf.

In proposing the name *Micheliella* Briquet,⁵ the author must have overlooked the fact that just exactly eighty years before, Rafinesque had separated these plants as typical of his genus *Hypogon*.⁶ *Micheliella* as a diminutive of a previously existing plant name is not a very desirable name at that, and its absence from our nomenclature by reduction to synonymy may be considered beneficial.

After examining carefully for possible homonymy, or synonymy in case of Rafinesque's name we can not find any reason whatever why *Hypogon* should not have been taken up lest it be that it was completely overlooked. This, however, is all the more inexcusable inasmuch as the Index Kewensis records *Hypogon* in two places, though the authors failed to notice one of the new combinations made by Rafinesque. Dr. Small⁷ in both editions of his Flora of the Southeastern United States accepts *Micheliella* with the same species exactly as quoted by Briquet and by Rafinesque so long before under *Hypogon*.

In other places Rafinesque⁸ calls attention to the first publication of his genus *Hypogon*. The exact quotations which are not too long may be here given.

"119. *Collinsonia verticillaris* Raf. Caule villosa, foliis subintegris, floribus tetrandris paniculatis verticillatis. Raf. *C. scabriuscula* Rob. p. 390. Grows near woods, stem scarcely two feet, flowers yellowish. The variety of *C. scabra* found by Mr. Lyons with four stamens and larger flowers. (See the Flora of Pursh) belongs perhaps to this species which together with *C. anisata* might properly form a subgenus (or a new genus) having four fertile stamens to which the name *Hypogon* might be given. (p. 41).

"5. Sp. 119. *Collinsonia verticillaris*. Its real name must be *Hypogon verticillatum* Raf. and the *C. anisata* must be *Hypogon*

5 Briquet in Engler and Prantl. Pflanzensyst. IV., III., A. p. 325, (1897).

6 Rafinesque, C. S. Flora Ludoviciana p. 41, (1817).

7 Small, J. K. Fl. S. E. U. S. p. —, (1903 and 1913).

8 Rafinesque, C. S. Am. Monthly. Mag. p. 101, (June 1818). l. e. also Med. Fl. 2, p. 230, (1830). "*Collinsonia anisata* belongs to the gen *Hypogon* of the Florul Ludoviciana having 4 fertile stamens."

anisatum Raf. since the number of stamina is constant and generic in this tribe, else the genera *Salvia*, *Rosmarinus*, *Lycopus*, etc., ought not to exist! *Hypogon* means beard beneath." (p. 148).¹

Another fact brought out by the above description is that Rafinesque's name *C. verticillaris* antedates Baldwin's *C. verticillatus*.² Following is the resumé of synonyms.

HYPOGON Raf. Fl. Lud. pp. 41 and 148, (1817).

Micheliella Briq. l. c. (1897).

Collinsonia Linn. seg.

Hypogon verticillare (Raf.) Nwd.

Collinsonia verticillaris Raf. Fl. Lud. p. 41, (1817) *Nomen prius*.

Collinsonia verticillata (Raf.) Baldwin.² l. c. (1818).

Hypogon verticillatum Raf. Fl. Lud. p. 148, (1817).

Micheliella verticillata (Baldw.) Briff. l. c. i. c. *Micheliella verticillaris* (Raf.)

Hypogon anisatum (Sims) Raf. F. L. p. 148, (1817).

Micheliella anisata (Sims) Briq. l. c.

Collinsonia anisata Sims Bot. Mag. t. 1213.

POLYGALA Linn.

The aggregated group of plants called by Linnaeus *Polygala* contains a mixture of types so dissimilar from one another that such would not be allowed together in other genera of the plant kingdom. Floral distinctions in one family are often overlooked which elsewhere were sufficient to constitute at least distinctions of generic importance elsewhere. Were the same standard of differentiation used in the *Polygalaceae* as prevails without objection or though of objection in the *Orchidaceae* what a difference there would be in the status of this so called genus. It would soon become a very much segregated one. In not a few of our floras and manuals the flowers are scarcely at all described.

If floral characters are constant characters and of sufficient importance to warrant generic distinctions in one group of plants it would seem illogical to neglect totally such characters in another group. It is on the basis of such notable distinctive floral marks

¹ See also Rafinesque, C. S., *Neogenyton*. p. 2, (1825). Rafinesque, *Flora Ludovic*. p. 148, (1817).

² Baldwin ex Elliott, *Sketch*, I., p. 36., (1818).

that we propose the following segregates from *Polygala*, some already made.

GALYPOLA nov. gen.

Planta subsimplex eglandulosa glauca erecta, foliis parvis, subulatis, remotis, alternatis, cum ramis paucis erectis virgatis floribus subspicatis roseis vel purpureis aliquando subviridibus, calyce irregulari, alis lanceolatis vel oblanceolatis, obtusiusculis vel acutis, sepalo superiore $2\frac{2}{3}$ -plo brevior quam alae ovato, lanceolato, acuto; binis inferioribus $\frac{1}{2}$ -plo minoribus quam alae, lanceolatis acuminatis subfalcatis omnibus plus minusve erectis vel etiam divaricatis. Carolla sympetala, tubula, supra carinata et apice cristata et basi fissa, ex qua parte ovarium etiam florescens se extrudit. Stamina 8, inaequalia, parva, superiora, corollae insita. Stylus barbatus apice supra glandem incurvatus.

Plant without glandular dots, annual, glaucous, erect, subsimple, not much branched, with spicately arranged flowers and small subulate alternate leaves. Flowers rose-colored or purple, or often somewhat greenish. Calyx very irregular, wings oblanceolate, obtuseish or acute, upper sepal about $\frac{1}{3}$ as long as the wings, acute ovate lanceolate, the two lower similar less than $\frac{1}{2}$ as long as the wings, lanceolate acuminate somewhat falcately curved outward. Corolla sympetalous parts unite into a long cleft tube about three times as long as the greenish white, more or less inconspicuous wings. Corolla expanded at the tip into a carinate unfolded crested tip with a number of protuberances (about 12) divaricately turned outward, some branched. Tube of the corolla cleft at its base on the upper side by the protruding ovary. Stamens 8 unequal, situated obliquely on the expanded portion of the corolla tube. Style long with its tip bearded and bent at right angles over the gland beneath it on the style. Ovary two-celled: caruncle of the hairy seed two-lobed crest like.

The very peculiar shape of the flowers of this plant with its peculiar habit of growth, bearded stigma, extended ovary, long tubed corolla, and short inconspicuous wings and sepals, combine with the other notable characters mentioned to make this plant totally different from the other members of this group. Unlike in most *Polygalae* the corolla is the most conspicuous parts of the flower and the wings of the calyx small and greenish. Though varying in many other respects the corolla in this plant most

closely resembles that of the plant called *Polygala paucifolia* Willd. The genus is, as far as I can find, to be considered as, monotypic.

GALYPOLA nov. gen.

Polygala Linn. Seg.

Galypola incarnata (Linn.) Nwd.

Polygala incarnata Linn. Sp. Pl. p. 701, (1753).

Other members of the Linnaean genus *Polygala* that may well be removed therefrom are the following:

ANTHALOGEA Rafinesque, New. Fl. Am. IV., p. 88, (1836).

The plant is biennial and beside the characters referred to by Rafinesque, produces regularly subterranean and often aerial cleistogamous flowers. Together with *Polygala paucifolia* Linn, it is the only other plant of the aggregate having apetalous or cleistogamous flowers.

Anthaloguea polygama (Walt.) Nwd.

Anthaloguea rubella Raf. l. c.

Polygala polygama Walt. Fl. Car. p. 179, (1788).

For the characters of the cleistogamous flowers see Shaw, C. H., Cont. Bot. Lab. Penn. Univ. II., 2, p. 173, (1901).

TRICHLISPERMA Raf.

The beautiful little plant with flowers most showy of all the group of *Polygala* has a number of notable distinctive characters that deserve consideration for generic standing. The plant was made by Rafinesque type of his genus *Trichlisperma*.¹ The crested elongated corolla recalls that of *Galypola*. The plant is perennial and produces cleistogamous flowers which were not unnoticed by Rafinesque though not so called by him, nor was he perhaps aware of their exact nature.² The habit too of the plant is quite different from any other *Polygala*. The peduncled flowers are different from those of either this or *Galypola*, the corolla resembling the latter somewhat but the wings those of *Polygala*. Stamens only six in two sets of three. Rafinesque mentions also differences in the seed. Rafinesque says that the roots contain oil of winter-green.³

¹ Rafinesque, C. S. Speech. 1, p. 117, (1814). (See also following note).

² Rafinesque, C. S. Med. Fl. II., pp. 63-65, (1830).

³ Rafinesque, C. S. Med. Fl. I., p. 205, (1828).

Trichlisperma Raf. Specch., I., p. 117, (1814).

Polygala Linn., segregate.

Trichlisperma paucifolia (Willd.) Nwd.

Trichlisperma grandiflora Raf. l. c.

Polygala paucifolia (Willd., Sp. Pl. 3. p. 380, (1800).

Polygala uniflora Michx., Fl. Bor. Am. 2, p. 53, (1893).

SENEGA Spach.

Polygala Senega Linn. has been separated as a genus and perhaps a good one by Spach. as *Senega officinalis* Spach.¹ The characters are not as notable as those of the plants already discussed.

ACER Linn.

The genus *Acer* has been left by phytographers even to the present day in nearly the same condition as treated by Linnaeus in 1753. Whether *Rulac* be segregated from it or not, it remains an aggregate containing plants with simple and compound leaves, plants that are dioecious and variously polygamous, flowers hypogynous and perigynous, flowers with or without petals and various kinds of perianth and difference in number of stamens, sepals separate or united. Some groups have intra-staminal, others extra-staminal disks. In fact, with *Rulac* removed from *Acer* the latter still presents anomalies greater than if left in because the segregation of the former only emphasizes the inconsistency of a procedure that disregards in this separation characters more important than those that warrant us from considering *Rulac* as distinct. All the above mentioned variations constant in the groups manifest themselves at once to the student that attempts to study the maples, and yet the aggregate genus is left in this condition without apparently the slightest misgivings on the part of modern botanists! Most diagnoses of the manuals, in fact, deftly gloss over the importance of the characters referred to by either scarcely referring to them or leaving the superficial student to deceive himself into believing they are variable characters.

About the only notable character that is made to hold this Linnaean *Acer* unsegregated is the similarity of the fruit in all the species. On the same principle of classification one would

¹ Spach. E. Hist. Nat. Veg. Phan. 7, p. 129, (1839).

be obliged to consider nearly all the members of the orchid family as one genus! Such neglect of fully appreciating the value of other important floral characters leads us to separate at least the Sugar Maples from *Acer*. If the characters are constant there can hardly be any good excuse for having plants with apetalous flowers in the same genus with petal-bearing plants.

Saccharodendron (Raf.) Nwd.

Segregate of *Acer* Linn. Subgenus *Saccharodendron* Raf. New. Fl. N. Am. p. 47, (1836).

Arbores cum foliis 3-5 lobatis subtus saepius glaucescentibus et inflorescentiis terminalibus sessilibus umbellatis; floribus praecocibus andromonoicis vel androdioicis, staminibus, 3-8, in stamineis perigynis (vel hypogynis) calice sepalorum connatorum, petalis nullis. Fructus et alia fere omnia ut in *Acer*.

Trees with leaves 3-5 lobed often glaucous beneath and with terminal (or lateral) sessile umbellate inflorescences. Flowers precocious, plants andromonoicous (or androdioicous). Calyx with sepals united: petals none. Stamens 3-8 perigynous (or hypogynous) in the staminate flowers. Fruit and most other characters as in *Acer*.

Type *Acer Saccharum* Marsh.

Section 1 *Saccharina*.

Flowers appearing just a little before the leaves, stamens in the staminate flowers perigynous, flowers andro-monœcious inflorescence terminal.

Saccharodendron barbatum (Michx.) Nwd.

Acer Saccharum Marsh,² Arb. Amer. p. (1785).

Acer barbatum (Michx.) Fl. Bor. Amer. 2. p. 252, (1803).

Saccharodendron floridanum (Chapman) Nwd.

Acer floridanum (Chapman) Pax. Eugler's Jahrbuch VII., p. 243, (1886).

Saccharodendron leucoderme (Small) Nwd.

Acer leucoderme Small. Bull. Torr. Bot. Cl. XII., p. 367, (1895).

² The name *Acer Saccharum* is absurd and besides homonymous if admissible with *Acer Saccharinum* Linn. *Saccharum* is the noun, *sugar* *Saccharinum* adjective thereof. A tree can not be the substance sugar! Marsh's name is ungrammatical and had better be dropped out of our nomenclature.

Saccharodendron hispidum (Schwerin) Nwd.

Acer hispidum Gr. von Schwerin, Nutt. Deutsch. Dendr. Gesell, p. 77, (1894).

Saccharodendron grandidentatum (Nutt.) Nwd.

Acer grandidentatum Nuttall in Torrey and Gray Fl. N. Am. I., p. 247, (1838).

Section or Subgenus *Sacchrosphendamnus*.

Flowers notably precocious, appearing long before the leaves. Stamens in the staminate flowers' hypogynous. Plants androdioicous. Inflorescence lateral. (Habit different from the rest and perhaps a good genus, *Sacchrosphendamnus*.)

Saccharodendron saccharinum (Linn.) Nwd.

Acer saccharinum Linn. Sp. Pl. p. 1055, (1753).

[*Sacchrosphendamnus saccharinum* (Linn.).]

The silver maple, *Saccharodendron saccharinum* (Linn.) Nwd. (*Acer saccharinum* Linn.) by habit and in very important other characters seems different enough to form a good subgenus or genus and in many cases differences such as here found would seem sufficient for generic distinction. The plants here included in *Saccharodendron*, however, will be seen to be very conspicuously and sufficiently different from the other maples to merit segregation. The calyx segments are not only united but the lobes are in all cases shorter than the tube in contradistinction to the almost distinct if not entirely distinct sepals of *Acer*. Petals are totally absent. The stamens are situated on the interior margin of the disk. The plants are andro-monoicous (and andro-diocous in *S. saccharinum*.) These characters alone would seem to indicate that the genus segregated herewith deserves as much if not more right to be accepted than *Rulac*. One would suppose that the latter should be reduced if *Saccharodendron* seems inadmissible. This latter differs by as great distinctions from the other maples as well as from *Rulac* and stands out markedly besides by its synsepalous calyx. Perhaps for consistency's sake still other segregation would be desirable but such notable characters as have been discussed can scarcely be overlooked for generic standing of any plants when these marks are constant.

CIRCAEA IN A SEPARATE FAMILY.

Apart from the fact that the habit of *Circaea* is different from

that of nearly all if not all of the *Onagraceae*, it has beside this its flowers in 2's, the upper part of the ovary or the stiped hypanthium is deciduous in fruit, while the rest of the Evening Primrose family have their flowers in 4's. *Ciraea* would more logically be a member and type of a separate family called by Dulac *Geminaceae*.¹ *Circacaceae* might perhaps have been a more appropriate name, but Dulac did not believe that any genus or family should be named after individuals. He therefore suppressed such names as *Circaea*, *Gentiana*, *Hutchinsia*, etc., though to be consistent he must have overlooked *Heracleum* and *Hypericum*, or made effort to explain them by different derivation. Type genus of family is, *Circaea* Linn., Gen. Pl. p. 24, (1754).

Perhaps we may take occasion to describe here the following.

Circaea alpina var. **aleutica** nov. var.

Planta cum caulibus, ramis, et petiolis crassis et praecipue nodis caulium et romorum intumescens, bracteis minutis aliquibus in inflorescentia sicut in *C. intermedia*; stigmatibus florum 2-divisa, stylo tenui.

Plant study with thick fleshy succulent stems, branches and petioles, and swollen nodes, also minute bracts present in the inflorescence. Stigma or style deeply 2-lobed.

Type No. 256514 of the U. S. National Museum, M. W. Gorman's No. 119 collected at Spacious Bay, Alaska, July 16, 1895.

FRAXINUS Linn.

The genus *Fraxinus* of Linnaeus is left at the present time after not a few attempts at segregation on the part of older phytophraphers almost in the same condition by our manual makers as is the genus *Acer*. As usually recognized in our floras and manual of to-day the so-called "genus" *Fraxinus* contains plants with petals and sepals, others with sepals only, others again that are perfectly achlamydeous. Some of the petaliferous ashes are quite choripetalous, others markedly sympetalous. This means that were one to arrange a key of a flora that would work satisfactorily one would have to make provision that the members of this genus could by amateur botanists (for which the manuals are principally intended) be determined with advantage if at all, only after searching among the apetalous, choripetalous, and sympetalous divisions of the dicotyledoneae. What is to be thought

¹ Dulac, J. Flore Dept. Hautes Pyr. p. 328, (1867).

of a "genus" which has species with constant characters to be looked for in these three major categories of distinctions? And yet modern botanists, persist and have persisted and perhaps may for a long time to come continue to persist without apparently the slightest misgivings, to consider plants of such varied, important and withal constant characters to constitute logically a genus!

The family *Oleaceae* is scarcely less of an anomaly than, *Fraxinus* as a "genus." It contains plants with flowers complete to various forms of declinism, fruits, capsule, berry, drupe or samara! Now, the American plants of this family having drupes or berries, have long been recognized and separated, among other characters principally by the presence or absence of petals or the union thereof in the genera *Forrestiera* (apetalous) *Chionanthus* (Choripetalous), *Ligustrum* (sympetalous). Why should it then be considered illogical or bold to suggest the segregation of the aggregate group, *Fraxinus* Linn. into segregates on the same principles of classification (and that in the same family at that) is beyond our comprehension. Granted that the characters hold constant it is difficult to comprehend why the fleshy fruited members of the same family are separable when the dry fruited (samara) members are not. The genus *Fraxinus* Linn. was in fact not nearly as anomalous and illogical as the modern one because he had only three species in it, but since his time botanists have put into it many different types, and mostly for no other reason than that the newly discovered plants had winged fruits, like the Linnaean species. The attempts at segregation on the part of earlier botanists not a few, attracted no serious attention on the part of modern bookmakers.

The following segregations, mostly made at one time or another by older botanists and even pre-Linnaean, may here be suggested. The type species of the Linnaean aggregate is *Fraxinus excelsior* Linn. This plant is polygamo-dioicous and has achlamydeous flowers. As these notes are suggested principally in the interest of the Eastern American plants not much attention will be paid to others and foreign plants usually crowded into the Linnaean genus *Fraxinus*.

FRAXINUS (Vergil) Linn. Sp. Pl. p. 1057, (1753), Gen. Pl. p. 477, (1754) in part.

Fraxinoides Med. Staats. Vorles. Churpf. Phys. Oek. Ges. I., p. 198, (1791). Phil. Bot. II., p. 30, (1791).

Fraxinus nigra Marsh, Arb. Am. p. 51, (1785).

Fraxinoides nigra Medic. l. c.

This species is the only one like the European achlamydeous *F. excelsior* Linn. and accordingly the only real *Fraxinus* in our region.

CALYCOMELIA Kostelm. Algem. Med. Fl. III., p. 1003, (1834).

Leptalis Rafinesque New. Fl. Am. III., p. 93, (1836). *Fraxinus* Linn. l. c. segregate.

Corolla none; calyx present at least in the fertile flowers and persistent. Lateral leaflets petioled. Type *F. caroliniana* Nutt. or *F. americana* Linn.

Calycomelia americana (Linn.) Kostel. l. c.

Fraxinus americana Linn. l. c.

Calycomelia biltmoreana (Beadle).

Fraxinus biltmoreana Beadle, Bot. Gaz. XXV., p. 358, (1898).

Calycomelia pennsylvanica (Marsh.)

Fraxinus pennsylvanica Marsh, Arb. Am. p. 51, (1785).

Fraxinus pubescens Lam. Encycl. II., p. 548, (1786).

Leptalis pubescens Raf. l. c.

Fraxinus lanceolata Borck., Handb. Forst. Bot. I., p. 826, (1800).

Fraxinus viridis Michx. f. Hist. Arb. Am. III., p. 115, p. 110, (1813).

Calycomelia caroliniana (Nutt.) Kostel. Ind. Hort. Prag. p. 26.

Fraxinus caroliniana Miller. Dict. Ed. 8, No. 6, (1768).

Fraxinus platycarpa Michx. Fl. Bor. Am. II., p. 256, (1803).

Leptalis platycarpa Raf. Alsog. Am. p. 35, (1838).

Rafinesque also referred this plant to his genus *Samarpses* New. Fl. Am. III., p. 93, as *S. triptera*, because of its peculiar fruit, but later put it back into *Leptalis*.

Calycomelia quadrangulata (Michx.) wostel. l. c.

Fraxinus quadrangulata Michx. Fl. Bor. Am. II. p. 253, (1903).

Calycomelia profunda (Bush).

Fraxinus profunda Bush, Britton, Man. p. 725, (1901).

Calycomelia pistaciaefolia (Torr.).

Fraxinus pistaciaefolia Torr., Pacif. R. R. Rep. IV., p. 128.

ORNUS (Pliny, 16:18) Ludwig-Boehmer Def. Gen. Pl. p. 476, (1760).

Mannaphorus Raf. Am. Monthly Mag. p. 175, (1818).¹

Ornanthes Raf. New. Fl. Am. III., p. 93, (1836).

Plants with calyx and 4-parted corolla, of almost separate petals. Style none or short.

Ornus europaea Person, Syn. I., p. 9, (1805).

Ornanthes florida Raf. l. c.

Fraxinus Ornus Linn. Sp. Pl. p. 1057, (1753).

Ornus cuspidata (Torr.)

Fraxinus cuspidata Torrey. Bot. Mex. Bound. p. 166, (1858).

Ornus Greggii (A. Gray).

Fraxinus Greggii A. Gray, Proc. Am. Acad. XII., p. 63, (1877).

There are many species in Eastern Asia. A considerable number of these are from China and not very long known. *Fraxinus sieboldiana* Blume,² (*Ornus sieboldiana*) of Japan belongs to this genus as also *Fraxinus* or *Ornus longicuspis* (Sieb. & Zucc.) and *Fraxinus* or *Ornus retusa* (Champ), T. or *Ornus bracteata* (Hems.) from China has a very short lobed in completely 4-divided corolla campanulate or salver-shaped and should perhaps better be a seprate subgenus at least.

Rafinesque referred *Fraxinus anomala* Torr. to his genus *Aplilia*.³ The plant has simple leaves. Specimens with more or less divided leaves of this or an allied species show this character as of not sufficient constancy to deserve consideration even if this character were otherwise of sufficient importance, which may be questioned.

Petlomelia nov. gen.

Arbor parva cum floribus depetalis quorum stylus plus minusve evolutus est: foliis 3-9 foliolatis, plerumque petiolulatis plus minusve serratis, coriaceis, petalis binis breviter unguiculatis, ovato-oblongis, vel obovato-oblongis antheras lineares alquantibus; fructu spatulato, retuso; calyce truncato vel dentato.

¹ This reference could not be found in the place, cited in our copy. The obvious meaning of the word is the only reason given for this quotation,

² Blume, Mus. Hort. Lugd. Bat. I., p. 311,

³ l. c.

Small tree with two-petaled flowers: style short but present. leaves 3-9 foliolate usually petiolulate, somewhat serrate, coriaceous. Petals short-clawed, obovate-oblong to ovate oblong as long as the linear anthers. Fruit spatulate retuse to linear oblong. Calyx truncate or somewhat toothed.

Type *Fraxinus dipetala* Hook. and Arn.

Petlomelia dipetala (Hook. and Arn.) Nwd.

Fraxinus dipetala Hook and Arn. Bot. Beech. Voy. p. 362, t. 87, (1841).

Ornus dipetala Nutt. Sylv. III., p. 66, t. 101.

This genus differs from *Ornus* in the number of petals which are two and so far distinct as to be in fact clawed. Style present, whereas it is absent or almost so in *Ornus*.

LUNELLIA, A NEW GENUS.

When first discovered the plant now commonly called *Syntheris* or *Wulfenia rubra* was very mistakenly referred by Hooker⁴ to the genus *Gymnandra* to which the plant bears no near relationship even. The author himself, however, later relegated it to *Syntheris*.⁵ This genus at first suppressed by Dr. Britton⁶ as not sufficiently distinct from *Wulfenia* as Dr. Greene showed in case of our American plants.⁷ The validity of the standing of *Syntheris* was discussed thoroughly by him, with the conclusion that the genus can be scarcely admitted apart from *Wulfenia*. Later another segregation was proposed by Dr. Rydberg,⁸ with *Wulfenia* or *Syntheris alpina* A. Gray as type, under the name *Besseyia*.

All these attempts at segregation are based on characters of calyx, stamens or habit, and *Syntheris rubra* (Hook.) Benth., has successively been relegated to all of these. The presence or absence of corolla would seem certainly to be a character deserving generic consideration. Everyone seems, however, to have either overlooked, or disregarded this important character even though known as constant. Though in *Wulfenia* the stamens are epipetalous the fact of their being situated on the outer side of the hypogynous disk in the plant called *W. rubra* indicates more than a

4 Dougl. in Hooker, Fl. Bor. Am. II., p. 103, (1840).

5 Britton, N. L. Ill. Fl. N. Am. III., p. 166, (1898).

6 Britton, N. L. Ill. Fl. N. Am., III., p. 199, (1913).

7 Greene, E. L., Erythea, I. p. 80, (1894).

8 Rydberg, P. A. Bull. Torr. Bot. Club. p. 279, (1903).

simple change involved in the disappearance or atrophy of corolla. Even if the latter is represented by the disk the stamen insertions were besides supposed to be carried downward to this disk or on this disk or they would have necessarily disappeared with the corolla itself in the process of variation phylogenetically.

In addition to this important character of *W. rubra* (Hook.) Greene, we find the calyx rather irregular as distinguished from the plants it has been associated with. It is, therefore proposed to make it the type of a new genus named in honor of Dr. J. Lunell of Leeds, North Dakota, a most zealous and able botanist of that region, to whom as collector and phytographer American botany as well as local is greatly indebted, and whose contributions of the botanical information on the plants of that region have frequently appeared in this journal.

Lunellia nov. gen.

Plantae erectae habitu *Wulfeniae Bullii*, rhizomate crasso; foliis basalibus petiolatis in caule quidem sessilibus alternis; floribus in spicis densis omnino apetalis; calice in segmenta inaequalia diviso; staminibus duobus cum stylo exsertis, aequilongis in exteriore margine disci hypogyno insertis; capsula emarginata, compressa, obcordata, duas habente cellulas.

Erect plants with the habit of *Wulfenia Bullii* with thick rhizomes, petioled basal leaves and sessile alternate cauline ones, flowers in dense spikes without corolla. Calyx deeply divided into unequal segments. Stamens two exserted with the style, and inserted on the outer margin of the hypogynous disk: filaments slender. Capsule emarginate not much compressed, two-celled. Type the following:

Lunellia rubra (Hook.) Nwd.

Gymnandra rubra Hook. Fl. Bor. Am. II., p. 103, (1840).

Syntheris rubra (Hook.) Benth. in DC. Prod. X., p. 455, (1846.)

Wulfenia rubra (Hook.) Greene Erythea, 1. c.

Besseyia rubra (Hook.) Rydberg l. c.

Beside this the new genus contains also the plants called *Syntheris wyomingensis* A. Nelson and *Syntheris gymnocarpa* Heller both without corolla, plants of the western United States.

Enetophyton nov. gen.

Planta parva scaposa erecta simplex, (nunquam ramosa)

floribus albescentibus vel purpurascentibus cleistogamis. 1-4, pedicellatis, inconspicuis et perparvis; calice 2-partito ejus labio inferiore minute 3-lobato et 5-nervato, superiore quidem 7-nervato: corolla breviter et obtuse saccata et bilobata: capsula globosa, multa perparva semina continente.

Plant small, scapose, erect, simple, leafless or with a few scales, with 1-4 pedicelled inconspicuous small flowers. Calyx two parted the lower lobe minutely 3-lobed and five nerved, the upper 7-nerved. Corolla two-lipped, bluntly saccate: capsule globose with many minute seeds.

This plant probably monotypic is distinct from *Utricularia* Linn. and the other genera recently segregated from this by its cleistogamous flowers. There seems some doubt that these minute flowers are really cleistogamous, but even then the characteristically peculiar shape of the flowers especially the corolla is sufficiently distinctive. If these flowers are then really chasmogamous and not cleistogamous they do not in any way resemble any of the flowers of the other *Utriculariaceae*.

The corolla is a subglobose sac-like structure with a slit at one end and a blunt continuation of the sac at the insertion below. The lobes are neither recurved or even reflexed or spreading. The flowers are subcorymbose. The peculiar color of the flowers too seems to bespeak no close resemblance to *Setiscapella subulata* (Linn.) Barnhart¹ (*Utricularia subulata* Linn.) of which it was first made a mere variety resembling it in habit.

Type species *Setiscapella* or *Utricularia cleistogama* (A. Gray).

Enetophyton cleistogamum (A. Gray) Nwd.

Setiscapella cleistogama (A. Gray) Barnhart. p. 231 l. c.

Utricularia cleistogama Britton, Trans. N. Y. Acad. Sci. IX., p. 12, (1889).

Utricularia subulata var. *cleistogama* A. Gray. Syn. Fl. 2, I., p. 317, (1878).

APHYLLON Mitchell.

The name *Aphyllon* Mitchell, (1769)¹ antedated Rafinesque's *Thalesia*² and should be restored. The name was accepted by

¹ Barnhart in Britton's Ill. Fl. N. Am. 2nd Ed. III. pp. 230-231, (1913).

² Mitchell, J. Diss. Brevis de Prin. Bot. and Zool. cum Append. Aliquot Gen. Pl. etc. Norimbergae (1769).

³ Rafinesque, C. S., Am. Month. Mag. 2, p. 269, (1818).

Dr. Gray³ but found later to be preceded by *Thalesia*. Mitchell's reprint was, however, overlooked as it was in the case of the genera *Pentstemon* and *Viticella* elsewhere noted.⁴

PHENIANTHUS Raf.

The plant called by Linnaeus *Lonicera sempervirens* by its almost regular corolla of four small subequal lobes and very long tube would seem to be at least as much entitled to generic standing as *Nintooa* Sweet. The latter has not nearly as characteristically different floral characters as the other. The flowers of Rafinesque's segregate plant *Phenianthus* for *L. sempervirens* are even more strikingly different from typical *Lonicera* than are those of the recognized genus *Xylosteum* Adams. The genus was proposed by Rafinesque and is probably a good one.

PHENIANTHUS Raf., Ann. Gen. Sc. Phys. VI. p. 83, (1820).

Phenianthus sempervirens (Linn.) Raf. l. c. (Type.)

Lonicera sempervirens Linn. Sp. Pl. p. 173, (1753).

Phenianthus arizonicus (Rehder).

Lonicera arizonica Rehder. Spring. Trees and Shrubs 1, p. 45, (1902).

TRIODANIS Raf.

The American plants hitherto referred to *Specularia* (Heist.) Fabr. or *Legouzia* Durand are in fact rather different from the common members of the old world genus with which they have almost invariably been associated. Rafinesque well acquainted with both the European *Specularia Speculum Veneris* (or *Specularia Speculum* wrongly called) and also knowing well our American plants was quick to recognize the differences between the two. He therefore made our plant *Specularia perfoliata* (Linn.) DC. the type of a new genus *Triodanis*.

The calyx according to his diagnosis is notably irregular in *Triodanis*. Three of the sepal lobes are narrower than the others and turned away from them giving the whole a bilabiate appearance. The corolla is deeply and the flowers are axillary on stems or the few branches, whereas in the European plant

3 Gray, A., Syn. Fl. 2, pt. 1, p. 312, (1878).

4 Am. Mid. Nat. III., p. 155, (1913).

5 See Small, J. K. Fl. S. E. U. S. p. 1125, (1903 also 1913).

they are almost flat-topped cymosely terminal. Moreover, our American plants have two kinds of flowers; the earliest and lowest are almost devoid of corolla, cleistogamous and with smaller and fewer calyx teeth. The capsule in the type is short cylindric or obconic.

TRIODANIS Raf. l. c.

Specularia (Heister) Fabr.⁶ or *Legousia* Durand⁷ segregate.

Triodanis perfoliata (Linn.) Nwd.

Triodanis rupestris (Linn.) Raf. l. c.

Triodallus rupestris (Linn.) DC. Prod. VII., p. 491, (1839).

Specularia perfoliata (Linn.) A. DC. Mon. Campan. p. 351, (1830).

Legousia perfoliata (Linn.) Britton. Mem. Torr. Bot. Cl. V., p. 309, (1894).

Campanula perfoliata Linn. Sp. Pl. p. 169, (1753).

Triodanis biflora (R. and P.) Nwd.

Campanula biflora (R. and P.) Fl. Per. 2, p. 55, pl. 200, (1799).

Specularia biflora (R. and P.) F. and M. Ind., Sem. Hort. Petrop. I., p. 17, (1835).

Triodanis leptocarpa (Nutt.) Nwd.

Specularia leptocarpa (Nutt.) A. Gray. Proc. Am. Acad. II., p. 82, (1876).

MESADENIA Raf. A SYNONYM.

The name *Mesadenia*¹ as applied to the composite plants segregates of *Cacalia* Linn. is inapplicable because the name was used by Rafinesque several years earlier in attempt to displace Walter's name *Frasera* of the *Gentianaceae*.² Concerning the status of the well recognized genus of *Compositae*, Dr. Greene has not only discussed fully its merits, but also thrown light on the somewhat confused condition of the nomenclature.³ De Candolle's first attempt at segregation was done as a section or subgenus under

6 (Heister, L.) Faltricius, P. K. Enum. Pl. Hort. H. lmst. p. 225, (1763).

7 Durande, J. Fr., Fl. Bourg. 2, p. 26, (1782).

1 Rafinesque, C. S., Loudon's Gard. Mag. 8, p. 247, (1832), also Rafinesque, C. S., New Fl. IV., p. 78, (1836).

2 Rafinesque, C. S., Med. Fl. I., p. 198, (1828).

3 Greene, E. L., Pittonia, III., p. 180-183, (1897).

Cacalia which he called **Conophora**.⁴ It would seem appropriate to perpetuate this as a generic name.⁵

Conophora (DC.) Nwd.

Cacalia Linn. Subgenus or Section *Conophora* DC. (1837).¹

Mesadenia Raf. Loud. Gard. Mag. 8, p. 247, (1832), and
Mesadenia Raf. New Fl. IV., p. 78, (1836) not *Mesadenia* Raf.
Med. Fl. I., p. 198, (1828).

?[*Arnoglossum* Raf. Fl. Lud. p. 64, (1817)]? nomen subnudum,
not *Arnoglossum* of the Ancients.)

Conophora atriplicifolia (Linn.) Nwd.

Mesadenia atriplicifolia (Linn.) Raf. l. c. p. 79.

Cacalia atriplicifolia Linn. Sp. Pl. p. 835, (1753).

Conophora reniformis (Muhl.) Nwd.

Mesadenia reniformis (Muhl.) Raf. l. c. p. 79

Cacalia reniformis Muhl. Willd. Sp. Pl. 3, 1735, (1809).

Conophora tuberosa (Nutt.) Nwd.

Mesadenia tuberosa (Nutt.) Britton. Ill. Fl. 3, p. 474, (1898).

Mesadenia plantaginea Raf. l. c. p. 79.

Cacalia tuberosa (Nutt.) Gen. 2, p. 138, (1818).

?[*Arnoglossum plantagineum* Raf. Fl. Lud. p. 65, (1817)]?

Conophora floridana (A. Gray) Nwd.

Cacalia floridana A. Gray, Proc. Am. Acad. XIX., p. 52, (1883).

Conophora ovata (Walt.) Nwd.

Mesadenia ovata (Walt.) Raf. o. c.

Cacalia ovata Walt., Carol. p. 196, (1785).

Conophora diversifolia (T. and G.) Nwd.

Mesadenia diversifolia (T. and G.) Greene l. c.

Conophora similis (Small) Nwd.

Mesadenia similis Small, Fl. S. E. U. S. p. 1301, (1903).

Conophora maxima (Harper) Nwd.

Mesadenia maxima Harper in Small, Fl. S. E. U. S., p. 1301,
(1903)., etc., etc.

⁴ De Candolle, A. P., Prod. VI., p. 329, (1837).

⁵ It is possible that the name of the cryptogamic plant *Coniophora* DC. and Pers. may render *Conophora* a synonym. If so *Adenimesa* may be suggested for *Mesadenia* Raf. (1832), with the same type *A. atriplicifolia*—*Mesadenia atriplicifolia* (Linn.) Raf. New Fl. 4, p. 79, (1836).

CYPHORIMA Raf.¹

This genus by important characters not ordinarily sufficiently emphasized deserves recognition even if *Batschia* be reduced to *Lithospermum* Linn. De Candolle² made *Batschia linearifolia* or *Lithospermum linearifolium* Goldie typical of his genus *Pentalophus*.³ Not well acquainted with the synonymy of the plant he simultaneously had it under *Lithospermum* as *L. angustifolium*⁴ Michx. These are now shown to be identical. There is no doubt that De Candolle described this plant as type of *Pentalophus* apparent from his description as well as quotation of synonymy.

Apart from the very notable character of having cleistogamous, flowers, a character rather unusual in the *Asperifoliae* the plant is well distinguished in other ways even from *Batschia* itself. The corolla tube is very long, three to five times that of the calix, and the lobes erose-denticulate, notably salver shaped, or trumpet shaped. The nutlets are keeled and the corolla appendages large and arching, the flowers becoming reflexed on their pedicels when the fruit forms.

Cyphorima Rafinesque, l. c.

Lithospermum Linn. or *Batschia* Gmelin in part.

Cyphorima angustifolia (Michx.) Nov. comb.

Lithospermum linearifolium Goldie. Edinb. Phil. Jr. p. 322, (1822).

Lithospermum angustifolium Michx. Fl. Bor. Am. 1, p. 130, (1803). Not Forskal.

Pentalophus longiflorus D. C. l. c.

Pentalophus angustifolius (Michx.)

Batschia longiflora Nuttall. Gen. 1, p. 114, (1818).

WHY MATTEUCIA?

There can be little doubt to those carefully studying the original works that the name *Struthiopteris* was first used for the Ostrich fern, (*Matteucia Struthiopteris* (Linn.) Todaro), by the discoverer of this plant. Its first publication was made by Valerius

¹ Rafinesque, C. S., Am. Monthly Mag. p. 191, 357, (1819) Cat. 13, (1824).

² De Candolle, A. Prod. X., p. 86, (1846).

³ l. c. p. 79.

⁴ l. c. 78.

Cordus.¹ Linnaeus reduced the genus to his *Osmunda*,² and unfortunately the first attempt at restoration of the name since 1753 was made to apply mistakenly to *Lomaria Spicant* (Linn.) Desv.³ Haller,⁴ Scopoli,⁵ (Ludwig, Boehmer),⁶ Weis,⁷ Trevisan,⁸ in fact all the followers of Haller thought apparently that the plant Valerius Cordus had at hand was *Lomaria Spicant* (Linn.) Desv., and not more than a year ago a goodly number of species new and old were put under *Struthiopteris* though under former conditions referable to *Lomaria*.⁹ Now, because of the "rules" that tolerate an error or a mistake, when made since 1753, it would be worse than useless to insist that the name *Struthiopteris*, be applied to what is now called *Mattuccia*, on the ground that the former was the first pre-Linnaean name of the latter, with Haller etc., to the contrary notwithstanding. Such an assumption of position would appear ridiculous to code followers, who may be expected to be logical or not as suits their whims.

On the authority of Trevisan was it asserted even that the original *Struthiopteris* Cordus is the Linnaean *Osmunda Spicant*.¹⁰ Trevisan like Haller and others must have put too much stock in the figure accompanying Cordus' description, to the detriment of careful study of his description, and all unmindful of the fact that the figures and illustrations of Cordus' History were put in by Conrad Gesner. The latter was not a very good botanist, but rather a zoologist, and in editing the other's work long after Cordus' death, added the figures, which in not a few cases were lamentably mixed up, and often so hopelessly transposed that even a botanical tyro in looking through the work must smile at mistakes, realizing immediately after reading the remarkable good descriptions of Cordus himself that this author could not have been responsible for such obvious blunders.

In confirmation of the fact that Cordus described the Ostrich

1 Cordus, V. Hist. Pl. 2, p. 170, (1561) edited by C. Gesner.

2 Linnaeus, C., Sp. Pl. p. 1066, (1753).

3 Desvaux, A. N. Ges. Nat. Fr. Berl. Mag. 5, p. 325, (1811).

4 Haller, A. Enum Stirp. Helv. p. 132, (1742) also 2nd Ed. 3, p. 6, (1768).

5 Scopoli, J. A., Fl. Car. p. 168, (1760).

6 Ludwig Boehmer, Def. Gen. Pl. p. 479, (1760) as a synonym. also Gleditsch Fl. Lips. p. 296.

7 Weiss, F. W., Pl. Crypt. Fl. Gott. p. 286, (1770).

8 Trevisan, V. C., Attis Ist. Ven. III., 14, pp. 553-558, (1869).

9 Broadhurst, J. Bull. Torr. Bot. Cl., 39, p. 257, (1912).

10 Thälius, J. Sylva Hareynia, p. 119, (1588).

fern we have also 'Thalius' remarkable diagnosis of the plant under the good binomial caption *Struthiopteris Cordi*. All this comment from our part is, of course, more or less useless perhaps, against a system that tolerates, any blunder or name provided it enjoy a certain priority in being perpetrated since 1753. It may serve, however, at least this much in as far as it calls attention to the mistake and its explanation.

The question of the application of the name *Struthiopteris* apart, we see no reason why *Matteucia* Todaro, should be used for the Ostrich fern, when another name **Pteretis** Rafinesque, quite valid as far as we know, antedates it by nearly fifty years. For reasons about to be referred to, it seems to us a very difficult matter to understand by what principles a name is often applied by our modern nomenclators. The followers of the Vienna Code will probably pay little attention to Rafinesque's publication of *Pteretis*,¹ because under a system without even the semblance of fast rules, it will be easy to find "clauses" whereby it can be put back into oblivion. The followers of the American or New York Codes have disregarded *Thelypteris* Schmidel (1760), an older name than *Dryopteris* Adanson (1763),² also rejected *Pentaphylloides* Duhamel (1755), for the later *Dasiphora* Raf. (1838). The logic of such procedure is difficult to see; concerning the reason or motive we will not venture a statement though perhaps we could. Ignorance of the fact of the publication of *Thelypteris* or *Pentaphylloides* need scarcely be considered. If *Thelypteris* is to be rejected in favor of a later *Dryopteris* because there was a different application of the name in its first pre-Linnaean publication, the name, *Struthiopteris* as used for *Osmunda Spicant* Linn. stands a parallel case. Then why is the latter acceptable and the former not? No reason being given for the rejection of *Thelypteris* and *Pentaphylloides* it may be supposed that perhaps there is none or there is no good one. Any way the logic of it is quite incomprehensible to us, unless there be a motive for ignoring it without any need or semblance of reason.

Now that *Pteretis* is found to antedate *Matteucia* we wonder whether it will be found worthy or acceptable in spite of its priority. We have seen so many cases lately of rejected names boasting priority since 1753, that we feel that all the much vaunted

1 Rafinesque, C. S., Am. Monthly Mag. II., p. 268, (1818).

2 Britton, IN. L. Ill. Fl. N. Am. I., p. 17, II., p. 262, (1913).

statements of fealty to the fetish of priority are meaningless noise or waste of good type space.

Realizing then that it is scarcely worth while to call attention even to the fact of the priority of *Pteretis* Raf., because of the very peculiar exhibitions of logic on the part of the manual writers, we still venture to propose the accompanying synonymy of *Struthiopteris* Cordus, because, whether acceptable or not before the high court of the codes, we will in spite of this feel that we are a little nearer to the truth, as dictated by the logical methods of either limited or absolute historical priority. Which horn of the dilemma will be preferable to the manual makers, namely, the acceptance of *Thelypteris* Schmidel (1760)¹ or *Dryopteris* Adanson (1763) and the analogous *Struthiopteris* Scopoli or *Struthiopteris* Willd., or on the other hand the acceptance of *Pteretis* Raf. for *Matteucia* Todaro (1866), we need not hazard a guess. In order to save the mark we may venture that another, perhaps a safer way were the suggestion of the complete suppression of *Pteretis* or *Matteucia* in any future editions, and its consequent reduction to synonymy under *Onoclea* Linn. In view of the fact of the rather widespread acceptance in the past of the validity of this group called *Matteucia*, its suppression is not really necessary, as it is a good genus, but this procedure might perhaps more easily be effected without as much need of explanation or evident ignoring of the fact of any one calling attention to the priority of *Pteretis* Raf. This procedure would render explanations needless, though of course in ignoring the truth it is scarcely necessary to hazard even an explanation for any mode of action. The following synonymy may be suggested:

Pteretis Raf. Am. Month. Mag., II., p. 268, (1818).

Matteucia Todaro, Geor. Sci. Nat. Palermo, I., p. 235, (1866).

Struthiopteris Willd. Enum. p. 1071, (1809) also Thalius, J. Sylva Hercyna p. 119, (1588), Cordus, V. Hist. Pl. 2, p. 170, (1561) [Opus Posth.] not *Struthiopteris* Haller, Scopoli, Weiss, Trevisan l. c. etc. = *Lomaria Spicant* (Linn.) Desvaux.

Pteretis Struthiopteris (Linn.)

Struthiopteris Cordi Thalius l. c.

Matteucia Struthiopteris Linn. Sp. Pl. p. 1066, (1753).

Onoclea Struthiopteris Hoffm. Deutsch. Fl. 2, p. 11, (1795).

¹ *Thelypteris* as used by Schmidel was accepted also by Haller. See his Hist. Stirp. Indig. Helv. III., p. 7, (1768).

PRIORITY OF HIEROCHLOA.

BY R. M. KACZMAREK.

Since the genus name *Galeorchis*,¹ (*Orchis spectabilis* Linn.), taken as type, supplants the generic names *Galearis* and *Galcaria* which constitute synonyms, and likewise since the genus *Gillena* (Adans.)² invalidates the genus *Gillenia* (Moench.)³ or *Elodes* (Adans.)⁴ reduces *Elodea* (Pursh)⁵ to synonymy, accordingly, the genus name *Hierochloa* (Genelin) Beauv.,⁶ ought to be substituted for the genus name *Savastana* (Schrank)⁷ which constitutes a synonym to *Savastania* (Scopoli).⁸

Following is the resumé of some of the species:

Hierchloa odorata Wahl. Fl. Ups. p. 32, (1820).

Savastana odorata (Linn.) Scribn.

Hierochloa Nashii (Bicknell).

Savastana Nashii; (Bicknell).

Hierochloa pauciflora R. Br. App. Parry's Voy. p. 293, (1824).

Savastana pauciflora (R. Br.) Scribn.

Hierochloa alpina R. and S. Syst. Vol. II., p. 515, (1817).

Savastana alpina (Siv.) Scribn.

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NOTES ON CLEISTOGAMOUS FLOWERS OF VIOLETS.- II.

BY J. A. NIEUWLAND.

In examining the cleistogamous flowers of acaulescent violets, it was found that there was often present a short lanceolate, ob-

1 Britton N. L. Manual Fl. N. U. S. Vol. I. p. 551, (1913).

2 Adans. Fam. II., p. 166, (1763).

3 Moench. Meth. Suppl. p. 286, (1802).

4 Adans. Fam. Vol. II., p. 444, (1763).

5 Pursh, Fl. Am. Sept. p. 360, (1814).

6 Beauv. Agrost. p. 62, (1812). *Hierochloe* Gmel. S. G. Fl. Sibir. Vol. I., p. 100, (1747).

7 Schrank, Baier, Fl. Vol. I., p. 100-137, (1789).

8 Scopoli, Introd. p. 213, (1777).

lanceolate, to spatulate growth between the two fertile stamens.¹ It was thought at the first² that this third body was a sterile stamen. More careful examination of flowers of *Viola cucullata* Ait, (*Viola obliqua* Hill) showed that this process of greater or smaller size is exactly alternate with the two stamens and also alternate with the lower sepals. Specimens were found in which the broader expanded portion was violet in color and even had a trace of spur-like sac. It is therefore the reduced lower petal or keel. This becomes all the more evident when, as is usually the case, we find that the other 3 stamens and the other 4 petals are found exactly in their relative positions with respect to the very unequal sepals. These stamens and petals are, however, so far reduced or atrophied as to be represented only by small globular-tipped gland-like bodies.

In not a few instances *Viola cucullata* Ait. shows also one or two other petals, one of these often colored blue oftener white. These correspond by position to the lateral ones of the spring flowers of the same plant. Another notable peculiarity of this violet is that occasionally one finds a small stiped ovary within the well developed seed capsule. This ovary within another, reminds us of the somewhat similar growth of the "navel" orange. The small long styled ovary is developed inside from the middle of the torus, and the style with its broad spoon-like stigma reaches well towards the apex of the outer one which is by this time well "run to seed." Often the style of the inner ovary is bent back upon itself the whole being often nearly 6-7 mm. long and apparently devoid of ovules.

Cleistogamous flowers of violets being quite easily obtained and at the same time available during most of the summer and fall, may very appropriately serve teachers in demonstrating the germination and growth of pollen tubes into the ovary. The stigmas of these flowers being only openings at the end of the short curved style, and devoid of sticky exudation, the pollen grains often germinate in or near the anthers sending their tubes from the stamens to the ovary. Even in old cleistogamous flowers in which, as in *Viola cucullata*, the capsule is already over a centimetre and even $1\frac{1}{2}$ cm. long, the cotton-like tufts of germinating pollen tubes may be seen with the naked eye near the top of the

¹ Nieuwland, J. A., Am. Mid. Nat. III. p. 85, (1913).

² l. c. p. 91.

recurved style. The style may be sectioned even with a razor blade and the course of the pollen tubes traced within. Better results can perhaps be obtained by embedding in parafin and making thick sections of the style with any ordinary students microtome. Any of the caulescent or acaulescent violets serve the purpose. The flowers of *Viola cucullata* are, however, among the most suitable because of their larger size. The violet is readily distinguished even in summer by the long auricles to the rather long unequal sepals of the cleistogamous erect or ascending flowers. The flowers are in condition of showing pollen tubes when the peduncle which is at first erect, begins to curve giving the ovary a reflexed position. The degree of curvature is often a good indication of the various stages of fertilization. *Viola cucullata* is usually formed in most situations, and bears a great abundance of cleistogamous flowers until late in fall.

POLYGONUM LONGISTYLUM SMALL, A SYNONYM.

BY J. A. NIEUWLAND.

On reading Rafinesque's description of his *Polygonum bicorné*¹ in the Flora Ludoviciana one can scarcely hesitate in believing that this author, or Robin from whom he may have gotten an original description, had in mind or more likely at hand, an abnormally large specimen of *Polygonum longistylum* Small.² There are characters about the description especially that of the "elongated exerted styles," that are unique for this plant, and found in no other American *Persicaria*. The locality in both cases of publication is the same. Rafinesque describes the plant as large, four or five feet high; Small's plant is given as but one or two feet high. If this discrepancy in size may be overlooked, then Small's name is a synonym. As the work of Rafinesque is rare, I shall quote the paragraph of his diagnosis in full:

"75. *Polygonum bicorné*. Raf. Caulibus ramosis, ramis geniculatis, patulis teretibus intus crenulatis; foliis petiolatis, lanceolatis, glabris; floribus spicatis confertis octandris, distylis, staminis inclusis, stylis exertis elongatis. Raf.—Renouée 1,

¹ Rafinesque, C. S. Flora Ludoviciana, p. 29, (1817).

² Small, J. K. Bull. Torr. Bot. Club, 1. p. 169, (1894), also, do. Monograph Am. Sp. *Polygonum* p. 62, (1895).

Rob. p. 366. Large plant, four or five feet high, branches purplish. every one of which bears a fine thick spike, about three inches long, of rose colored flowers. This species, and all the following, grow in swamps, moist grounds, and along the rivers; they are called vulgarly *Curages*, in Louisiana; all their flowers smell like honey, and afford it in plenty to the bees. Blossoms from August to December."

Transferred to the genus *Persicaria* we have the following synonymy:

Persicaria bicornis (Raf.) Nov, comb.

Polygonum bicornis Raf., (1817) l. c.

Polygonum longistylum Small, -(1894) l. c.

OUR BIRDS IN THE SPRING OF 1913.

BY BROTHER ALPHONSUS, C. S. C.

Several species were observed but a few times in March. The long interval between the first and second dates on which the Golden-crowned Kinglet was seen is exceptional. The Herring Gull is an occasional visitant to our inland lakes and rivers. The Northern Shrike is a very rare species—seen only late in autumn, in winter, and in early spring. Species which are only occasionally seen during their migration are: Kingfisher, Cowbird, Mourning Dove, Phoebe, Red-winged Blackbird and Killdeer.

The Tree Sparrow was most regular in its appearance in March and early April, no interval during this period being a week in length. The species may be found during this time in gardens and orchards. In most other parts of its stay with us, this sparrow is only rarely found.

Like the Tree Sparrow, the Brown Creeper was oftenest seen late in March and early in April. There were no long intervals between any of its dates in those two months; but in March, 1912, the species was not once recorded; and in April there was one interval of 7 days, the total number of records for the month being 8.

A comparison of the records for 1912 with those for 1913 shows considerable difference in the dates on which the Fox Sparrow was observed. In the former year there were five consecutive records from April 2 to 6; in the latter year there were four obser-

vations in April, with a long interval of 8 days between the second and third record. The writer searched for the species twice a day on the days it was not seen, but failed to find the birds anywhere.

In the dates of observation of the Hermit Thrush, one or two long intervals occur each year in April. In 1912, there were periods of 12 and 14 days during which the species was not recorded. In 1913, 9 days was the long interval when this thrush was not observed. It would be difficult to assign a cause for these long intervals, for the weather was not cold during the absence of the species in April, 1912.

Another species whose records for 1912 and 1913, in April, show much difference is the Barn Swallow. In 1913, there were but two records—April 11 and 30; in 1912, six records and no long period between is shown. Towards autumn I have found this species irregularly, and conclude that during times of migration this swallow may not be found frequently.

The presence of the Yellow Palmer Warbler in April, from the date of arrival almost daily until the time of departure in May, was usual for this species. In April, 1912, this warbler was not once recorded, which was remarkable; for the Yellow Palm most often arrives in spring soon after the Myrtle Warbler, the earliest of all our warblers.

Another species which had a record in April, 1912, similar to that of the Yellow Palm Warbler was the House Wren. This bird generally arrives the last week in April; but this month was very cold for the season in 1912, which, doubtless, was the cause of the late arrival of the House Wren in that year.

On May 26, a very heavy rainfall occurred, beginning at 1 a. m. and lasting all day. At 2 p. m. the temperature was 50°. I went out for about half an hour and walked in a small park near the Main Building, but saw only a Robin and a Bronzed Grackle. But for this storm a number of species would have been recorded every day in May.

The Towhee showed a marked difference both in April and May in 1912 and 1913. In the spring of 1912 only 8 records were made for the species—4 in April and 4 in May; whereas in 1913, there were 14 records in April and 17 in May. The writer has found no species that shows more striking differences than the Towhee. Whole seasons may pass without the presence of this species in certain localities where it ought to be found.

Species that were not seen before by the writer were: Blue Gray Gnatcatcher, Prairie Warbler, Blue-headed Vireo, Yellow-breasted Chat and Carolina Wren. The Yellow Rail was observed for the first time in the fall of 1912. The Blue Gray Gnatcatcher and Blue-headed Vireo were certainly present here each spring previous to that of 1913, but both are migrants that do not spend the summer in this locality. The Gnatcatcher is a common summer resident at Bankson Lake, Van Buren Co., Mich., where the species is found in deep woods. In spring the bird passes rapidly through Notre Dame, Ind., and may easily be overlooked by any but an experienced observer. The Blue-headed Vireo may also be easily overlooked, for the similarity of its song to that of the Yellow-throated Vireo will make most observers think the singer is the latter species. The Yellow-breasted Chat was observed in a very swampy place, where it alighted in a tree in full view but darted away in a few moments and was not seen again. The bird uttered no note. The Carolina Wren was observed in June as well as in May, and must have nested in this locality. The bird was in song in oak groves and in locust trees in a cemetery.

MARCH.

Birds seen on the dates after their names:

Blue Jay, 10, 11, 18, 19, 21, 23, 24, 27, 31.	22, 23, 24, 29, 30, 31. Robin, 9 to 15, 17 to 31.
Crow, 9 to 13, 15 to 21, 23 to 31.	Killdeer, 12, 19, 20, 25, 29, 30.
Snowbird, 11, 12, 15, 19, 20, 21, 23 to 31.	Red-winged Blackbird, 25, 30, 31 Phoebe, 19, 26, 30, 31.
Downy Woodpecker, 10, 11, 12, 20, 21, 23, 25, 26, 30, 31.	Mourning Dove, 23, 31. Cowbird, 18, 20, 24, 30, 31.
White-breasted Nuthatch, 10, 13, 16, 19, 21, 25, 26, 29.	Kingfisher, 22, 27. Northern Shrike, 10.
Tree Sparrow, 9 to 11, 17, 20, 26 to 29, 31.	Bronzed Grackle, 12 to 20, 22 to 31.
Bluebird, 11 to 14, 17 to 20, 24, 25, 26, 29, 30, 31.	Field Sparrow, 22, 26, 29, 30, 31. Herring Gull, 15, 28.
Brown Creeper, 16, 20, 25, 26, 30.	Canada Geese, 15.
Song Sparrow, 11, 12, 13, 15 to 20, 23 to 26, 28 to 31.	Golden-crowned Kinglet, 19, 30, 31.
Meadowlark, 12, 13, 18, 19, 20,	

Total number of species seen in March, 23.

APRIL.

Birds seen on the dates after their names:

- | | |
|--|--|
| Blue Jay, 1, 3, 5, 7, 8, 10, 11,
12, 14 to 25, 27 to 30. | Chicken Hawk, 16. |
| Crow, 1, 2, 3, 7, 8, 10, 12 to 17,
20, 21, 23, 24, 25, 27 to 30. | Sparrow Hawk, 28. |
| Snowbird, 1 to 16, 28, 29. | Golden-crowned Kinglet, 2, 3,
4, 5, 6, 9. |
| Downy Woodpecker, 1, 2, 3, 5,
8, 9 to 12, 14 to 17, 20, 21,
23, 24. | Chickadee, 1. |
| White-breasted Nuthatch, 1, 2,
6, 9, 11, 14, 16, 17, 18, 20
to 23, 25, 28, 29. | Vesper Sparrow, 2, 5, 7, 8, 12 to
16, 18, 20 to 23, 25, 27 to 30. |
| Tree Sparrow, 2, 3, 4, 5. | Fox Sparrow, 5, 8, 17, 18. |
| Bluebird, 1, 2, 3, 5, 7 to 14, 16,
17, 19 to 24, 26, 27, 29, 30. | Towhee, 6, 7, 10, 11, 16, 19 to
24, 26, 28, 29, 30. |
| Brown Creeper, 3 to 7, 11, 14,
19, 20, 21. | Hermit Thrush, 19, 20, 22, 23. |
| Song Sparrow, 1 to 30. | Sapsucker, 3, 4 to 8, 10 to 13,
15, 19, 20, 23. |
| Meadowlark, 1 to 30. | Barn Swallow, 11, 30. |
| Robin, 1 to 30. | Myrtle Warbler, 18, 20, 22 to 30. |
| Killdeer, 1, 2, 8, 16, 18, 20, 22,
23, 28, 29, 30. | Spotted Sandpiper, 24, 26, 28,
29, 30. |
| Red-winged Blackbird, 1, 2, 5,
7 to 30. | Red-headed Woodpecker, 29, 30. |
| Phoebe, 1 to 7, 9, 10, 12, 13,
14, 16, 18, 19, 21, 23, 28, 29. | Warbling Vireo, 26, 29, 30. |
| Mourning Dove, 1, 4, 10, 11,
12, 14 to 30. | Brown Thrasher, 12, 14, 15, 16,
18 to 22, 24 to 30. |
| Cowbird, 1 to 23, 25 to 30. | Ruby-crowned Kinglet, 16, 18,
20, 21, 22, 23 to 26. |
| Kingfisher, 5, 8, 9, 12, 16, 19,
22, 27, 29, 30. | Pine Warbler, 18, 23. |
| Flicker, 1, 3 to 26, 28, 29, 30. | Redstart, 20. |
| Chipping Sparrow, 15, 18 to 26,
28, 29, 30. | White-throated Sparrow, 21 to
26, 29, 30. |
| Purple Grackle, 1 to 30. | Tennessee Warbler, 22. |
| Loggerhead Shrike, 8, 10. | Yellow Palm Warbler, 22 to 26,
28, 29, 30. |
| Field Sparrow, 1, 2, 3, 5 to 24,
28, 29, 30. | House Wren, 22, 23, 24, 25, 30. |
| | Goldfinch, 23, 26, 30. |
| | Red-breasted Nuthatch, 23, 30. |
| | Swamp Sparrow, 23. |
| | Short-billed March Wren, 28. |
| | Baltimore Oriole, 29, 30. |
| | Yellow Warbler, 30. |

Total number of species seen in April, 50.

MAY.

Birds seen on the dates after their names:

- Crow, 4, 5, 7 to 10, 12, 13, 14, 16, 18, 19, 20, 23, 24, 27, 31.
 Blue Jay, 1 to 6, 8, 9, 10, 12 to 22, 24, 27, 28, 29, 31.
 Robin, 1 to 31.
 Bluebird, 1, 2, 6, 7, 9, 10, 12, 13, 14, 15, 17, 18, 22, 24, 29, 30, 31.
 Song Sparrow, 1 to 25, 27, to 31.
 Meadowlark, 1, 2, 3, 5 to 8, 10 to 22, 24, 25, 27 to 31.
 Bronzed Grackle, 1 to 31.
 Killdeer, 1, 2, 4, 13, 16, 17, 18, 19, 20, 22, 24, 25, 28, 31.
 Towhee, 1 to 6, 8 to 16, 20, 24.
 Field Sparrow, 1, 3, 5 to 17, 19, 20, 23, 24, 25, 27 to 31.
 Vesper Sparrow, 1, 2, 3, 5, 6, 10, 12 to 19, 21, 22, 25, 27 to 31.
 Red-winged Blackbird, 1 to 13, 15 to 25, 27, 28, 30, 31.
 Mourning Dove, 1 to 22, 24, 25, 27 to 31.
 Hermit Thrush, 3, 5, 6 to 10, 12 to 24, 27, 28, 29.
 Cowbird, 1 to 15, 17 to 25, 28, 29, 31.
 Kingfisher, 1, 10, 11, 15, 20, 29.
 House Wren, 1 to 25, 27 to 31.
 Yellow Palm Warbler, 1, 2, 4 to 11, 13, 14, 16.
 Chimney Swift, 2 to 25, 27 to 31.
 Yellow Warbler, 2, 5, 6, 7, 9, 10, 11, 13, 14, 15, 17, 20, 21, 22, 25, 27, 29, 30.
 Warbling Vireo, 1 to 25, 27 to 31.
 Catbird, 1 to 25, 27 to 31.
 Baltimore Oriole, 1 to 25, 27 to 31.
 Indigo Bird, 9, 14, 15, 16, 17, 20, 24, 27, 28, 30.
 Orchard Oriole, 3, 4, 6, 9 to 14, 16 to 23, 25, 27, 28, 30, 31.
 Kingbird, 3 to 7, 11 to 21, 24, 25, 27 to 31.
 Black-throated Green Warbler, 2, 4, 23.
 White-breasted Nuthatch, 5, 12, 13, 15, 16, 17, 19, 20, 27.
 Redstart, 16, 19, 23, 28.
 Scarlet Tanager, 13, 21, 25.
 Least Flycatcher, 12, 15, 16, 17, 20, 23, 24, 29.
 Alder Flycatcher, 9, 15, 24, 27.
 Crested Flycatcher, 6, 7, 15 to 24, 27, 28, 31.
 Cedarbird, 16, 18, 19, 20, 21, 31.
 Yellow-billed Cuckoo, 16, 18, 19, 31.
 Nighthawk, 16, 17, 20, 25, 27 to 31.
 Whip-poor-will, 1.
 Red-headed Woodpecker, 1 to 22, 24, 25, 27 to 31.
 Spotted Sandpiper, 1, 2, 3, 5, 7, 8, 9, 11, 12, 14 to 21, 27, 28, 31.
 Myrtle Warbler, 1 to 7, 9, 10, 11, 14.
 Brown Thrasher, 1 to 21, 23, 24, 25, 27, 28, 29, 31.
 Chipping Sparrow, 1 to 14, 16 to 22, 24, 25, 27 to 31.
 Flicker, 1, 2, 3, 5 to 10, 12 to 20, 23, 24, 27 to 31.

- Goldfinch, 1 to 25, 27 to 30.
Black-poll Warbler, 17 to 25,
27, 28.
Red-eyed Vireo, 9, 15, 16, 18
to 21, 24, 25, 29, 30, 31.
Magnolia Warbler, 16, 17, 19, 24
Wood Pewee, 14 to 25, 27 to 31.
Bay-breasted Warbler, 16, 22.
Phoebe, 3, 4, 8, 12 to 16, 18.
Ruby-crowned Kinglet, 2.
White-throated Sparrow, 1, 2, 3,
5, 6, 8, 11, 20.
Blackburnian Warbler, 11.
Nashville Warbler, 6, 9, 10.
Yellow Rail, 7, 8, 10.
Kentucky Warbler, 23, 24.
Red-breasted Nuthatch, 16.
Black-billed Cuckoo, 21.
Chestnut-sided Warbler, 5, 10,
12, 15 to 20, 22, 23, 24.
Cape May Warbler, 16, 17, 28.
Bobolink, 5, 9.
Rose-breasted Grosbeak, 5, 6,
7, 10, 11, 13, 14.
Canadian Warbler, 23, 24.
White-crowned Sparrow, 7, 10,
11, 12, 14, 15.
Black and White Warbler, 9, 16,
17, 22, 23.
Barn Swallow, 2, 4, 5, 10 to 14,
16, 17, 18, 20 to 24, 27, 30, 31.
Downy Woodpecker, 2, 9, 14,
16, 18, 29.
Screech Owl, 1, 20, 22, 31.
Loggerhead Shrike, 18.
Chicken Hawk, 7.
Cardinal, 4.
Swamp Sparrow, 5, 5, 24.
Water Thrush, 5 to 10, 12 to
17, 24, 25, 27, 28.
Blue Gray Gnatcatcher, 6.
Prairie Warbler, 6.
Tree Swallow, 10.
Blue-headed Vireo, 10, 16, 21,
24, 29.
Yellow-breasted Chat, 27.
Yellow-bellied Flycatcher, 27.
Hummingbird, 28.
Carolina Wren, 28.
Maryland Yellowthroat, 30.

Total number of species seen in May, 85.

Total number of species seen in spring, 98.

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THE EDITOR, Notre Dame, Indiana

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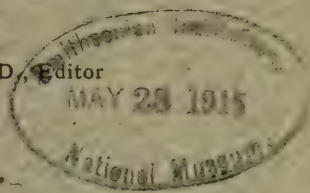
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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor



CONTENTS

Studies in Viola.—I.	J. A. Nieuwland 207
Notes on Our Local Plants.—V.	J. A. Nieuwland 217
Our Birds in the Autumn of 1912	Brother Alphonsus, C. S. C. 243
Our Birds in the Summer of 1913.	Brother Alphonsus, C. S. C. 248
Critical Notes on New and Old Genera of Plants.—II.	J. A. Nieuwland 253

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STUDIES IN VIOLA.—I.

Proposed Segregates of Viola.

BY J. A. NIEUWLAND AND R. M. KACZMAREK

The presence or absence of cleistogamous flowers in plants has become more and more recognized as a basic character for classification. The genus *Crocanthemum* of Spach,¹ lately recognized² by Dr. Britton as the name applicable to our American Rock Roses or Frostweeds has as perhaps its most important character of distinction from *Halimium* and *Helianthemum*, the presence of the less conspicuous cleistogamous flowers. In a closely allied family, the *Violaceae*, in the genus *Viola*, these flowers serve no unimportant part in differentiating species from one another. As the presence or absence of them seems to be a constant character in the plants mentioned we can see no reason why further segregation of the old aggregate genus *Viola* may not be suggested with reason, all the more as there are very important characters of cleistogamous flowers, and the habit of the plants in question demands serious consideration of the matter. In fact Spach and others before and after him without reference to presence of cleistogamous flowers thought the various groups now aggregated under *Viola* as sufficiently different from one another to constitute natural genera. Even before Linnaeus and by some after him, the Pansies were grouped by themselves. As already intimated in a former article by one of us³ not only are these flowers present constantly in some groups with other important differential characters, and absent in others, but when present, there are

¹ Spach, E., Am. Sci. Nat. II. 6, p. 370, (1836); also Hist. Nat. Veg. VI., p. 95, (1838).

² Britton, N. L., Ill. Fl. N. U. S. II., p. 539, (1913).

³ Nieuwland, J. A., Am. Mid. Nat. III., 3, p. 85-91. (p. 90).

important characters of distinction in these cleistogamous flowers themselves.

During the past season particularly, and in fact for nearly a decade past, this interest in the apetalous flowers was maintained by us. Though not a great number of individual species has as yet been examined, in every one of the groups it has been found that *c. g.*, acaulescent violets including, the white violets such as *V. lanceolata*, *V. primulaefolia*, *V. blanda*, *V. incognita*, have uniformly, as far as examination of their cleistogamous flowers was made, two fertile stamens, with occasionally the presence of a very small abortive petal or two, as in case of *V. cucullata*. The solitary abortive petal is usually the keel, or lower petal. The other petals and stamens are represented if at all as minute processes like small stiped capitate glands, found in their regular positions with respect to the more or less equal sepals.

The caulescent violets represent three groups. The pansies which are annuals, biennials or winter annuals, have no cleistogamous flowers. *Viola eriocarpa* Schwein (*Viola scabriuscula* Schwein) and *Viola pubescens* Ait., have subequal sepals and only two stamens in their apetalous summer flowers. *Viola canadensis* Linn., *Viola rostrata* Pursh, *Viola striata* Ait., have five fertile stamens in their cleistogamous flowers. The first of these does not produce these flowers until very late in the season and then the transition from petaliferous to apetalous ones is a rather gradual process. The petals become gradually smaller and finally disappear completely, one or several at a time. The sepals are short and seem to be open when the capsule is fertilized. Even late in fall there may often be found what seem to be cleistogamous flowers with one to several minute whitish petals. In fact the budlike closed cleistogamous flowers of this species do not seem to be as fertile as they are in the rest of the violets, and appear to fall off aborted before producing seed. They are reproduced at the end of the shoots and are short-stalked apical and sometimes in old leaf axils.

The cleistogamous flowers of *Viola rostrata* are among the first to appear and continue to develop until winter. The sepals are at first and before fertilization somewhat unequal. The peduncle is not bent and this is the case in all the plants of the caulescent group. The stamens are five in number. They grow usually from the ends of the stems which do not elongate much;

they are at first rather long and slender peduncled and become shorter late in season. The apetalous flowers are not produced by transition from the petaliferous ones but appear immediately in their characteristic form.

Viola striata Ait., resembles the preceeding in the number of stamens. The sepals have long auricles that are characteristic of the plant. The sepals are very unequal, the inner being much shorter than the two or three outer ones. The transition to cleistogamous flowers is rather more gradual but not so much so as in *V. canadensis* Linn. The styles and stigmas of the caulescent cleistogamous flowers are usually nearly straight somewhat expanded above or but very little reflexed.

Viola pedata Linn., stands in a class by itself as having no cleistogamous flowers. The following key shows the relationship of the proposed segregates. No species will be transferred by us unless such as we have examined and the number of stamens determined. Moreover, no species will be mentioned in *Viola* proper unless this fact of the presence of two stamens has been determined.

KEY TO GENERA AND SUBGENERA

- A. Plants acaulescent, the leaves and flowers of both kinds either directly from rootstock or runners.
 - (a) Cleistogamous flowers none.....Genus **Oionychion** (type *V. pedata* Linn.)
 - (a) Cleistogamous flowers present in summer after the vernal petaliferous ones.....Genus **Viola** (type *V. odorata* Linn.)
 - (b) Rootstock thick, plants with stolons, petals blue, the lateral bearded.....Subgenus **Euion** (type *V. odorata*).
 - (b) Rootstock thick, plants without stolons, petals blue,¹ the lateral bearded.....Subgenus **Hesperion** (type *V. palmata*).
 - (b) Rootstocks, slender, plants from and with stolons, petals white or pale lilac.².....Subgenus **Verbasculum** [old Genus] (type *V. primulaefolia* Linn.)
- A. Plants caulescent, flowers axillary.
 - (a) Cleistogamous flowers present appearing after the petaliferous later in the season. Plants perennial.
 - (b) Stamens of the cleistogamous flowers two, petaliferous flowers yellow.....Genus **Crocion** (type *V. pubescens* Ait.)
 - (b) Stamens of the cleistogamous flowers five, petaliferous flowers white, purplish or blue..Genus **Lophion** (type *V. canadensis* Linr.)

¹ White in *Viola candidula*.

² *Viola rotundifolia* Michx. with yellow flowers may perhaps form another subgenus.

- (c) Lower petal spurred, flowers violet blue. Style not capitate. Subgenus **Eucentrion** (type *V. rostrata*) Pursh.
- (c) Lower petal not spurred, flowers not blue, white within, base yellow. Style capitate. Subgenus **Eulophion** (type *V. canadensis* Linn.)
- (c) Lower petal spurred. Flowers white or cream colored. Style not capitate. Subgenus **Rhabdotion** (type *V. striata* Ait.)
- (a) Cleistogamous flowers absent. Plants annual or biennial. Genus **Mnemion**¹ (type *V. tricolor* Linn.)

Onionychion Gen. Nov. *Viola* Linn. pro parte.

Planta acaulescens ramulos stoloniferos carens, radicibus fibrosis rhizomate praemorso, carnoso, erecto, brevi, vel cormo elongato, stricte simplice nunquam ramoso; floribus cleistogamis nullis, vernalibus autem magnis purpureis; foliis vernalibus parvis, subpedate 5-9-partitis, laciniis latioribus; aestivis vero linearibus longioribus et angustioribus cum pedunculo flores multo excedente, 4-angulato. Stamina cum appendicibus magnis, antheris sessilibus, bina inferiora caudata, inferius obtuse plus minusve calcaratum. Petala non barbata. Stylus clavatus eros-tratus, apice oblique concavus, cum stigmate in tuberculo parvo, quod eodem medio apice concavo inclusum est.

Acaulescent stolonless plants with fibrous roots without aestival cleistogamous flowers and with large showy purplish vernal ones. Rootstocks short, premose, erect, or elongate corm-like, unbranching. Leaves of two kinds, small early ones broad-lobed less dissected. Orange stamen tips large, or obovate, anthers sessile the two lower with a curved projection into the more or less saccate spur. Style club-shaped, beakless, obliquely concave at the summit. Stigma within a small protuberance near centre of cavity. Petals all beardless entire. Peduncles somewhat 4-angled much longer than leaves.

Oionychion pedatum (Linn.) Comb. Nov.

Viola pedata Linn. Sp. Pl. p. 933, (1753).

Oionychion pedatum var. **inornatum** (Greene).

Viola pedata var. *inornata* Greene Pitt. III., p. 35, (1896).

¹ The name *Ion*. Medicus Malv. p. 102, (1787), is probably only a synonym for the Linnaean *Viola*, and not meant as a segregate of the pansies from the genus. The name was a synonym before Linnaeus and is but the literal Greek translation of the Latin *Viola*. *Ion arvense* would be less appropriate than *Mnemion arvense*. We therefore reject the name in favor of the later *Mnemion* Spach.

Oionychion pedatum var. **ampliatum** (Greene).

Viola ampliata Greene. Leaflets Bot. Obs. Crit. I, p. 3, (1903).

The habit of these plants and their petaliferous flowers as well as lack of cleistogamous flowers, and peculiar structure and shape of stigma and style, even the cormlike erect rhizome which never branches, together with the other characters mentioned mark these plants as very distinctly different from any of the other violets. The habit of these plants could perhaps be more considered as that of a perennial stemless pansy, than a violet proper. The absence of cleistogamous flowers emphasizes this so much that the earlier botanists before Linnaeus referred the plant called *Viola pedata* Linn., to *Viola tricolor*, or a stemless pansy, calling it "*Viola tricolor, caule nudo foliis tenuius dissectis*"⁴ or "*Viola virginiana, foliis multifidis cauliculo aphylo*."⁵

The name *Oionychion* comes from the Greek words οἰωνός, bird, ὄνυξ, ὄνυχος, claw, ἵον, violet.

VIOLA (Vergil, Pliny) Linn. Sp. Pl. p. 933, (1753).

Subgenus EUION.

VIOLA ODORATA (Tragus) Linn., Sp. Pl. p. 934, (1753).

Viola purpurea Pliny, Hist. Nat. XXI.: 6, also Ruellius, Nat. Stirp. 633, 49, (1543), etc., etc.

Viola maritima Gall. ex. Ruellio l. c.

Viola nigra Vergil 4: 120; also Brunfels, Herb. Viv.

Ic. p. 137, (1530).

Viola officinarum Ruppius.

We have not been able to secure good cleistogamous flowers of this plant for study.

Subgenus HESPERION

VIOLA FIMBRIATULA J. E. Smith in Rees' Cyclop. Vol. 37, No. 16, (1817).

Viola ovata Nutt. Gen. Vol. I.: 148, (1818).

Viola sagittata var. *ovata* T. and G. Fl. N. A. Vol. I. p. 133, (1838.)

The auricles of the sepals of the apetalous flowers are as long almost as in *V. cucullata*. Specimens from Mineral Springs (Porter Co.), Ind., were examined. Flowers sometimes especially late in season have a small spatulate whitish or bluish keel petal and one or two small abortive lateral petals. Stamens two. Once

⁴ Banist, J., in Ray. J. Hist. Pl. II. p. 1928, (1688).

⁵ Plukenett, L., Alm. p. 388, t. 114. f. 7, (1696).

only was one found that had a third subabortive stamen with only one anther that appeared fertile. This anther being the only one found of many examined, it was thought to be a case of teratology.

VIOLA CUCULLATA Ait. Hort. Kew. 3 p. 228, (1789).

Though the cleistogamous flowers very often have one to three petals, never have more than two fertile stamens been found. The keel petal is spatulate bluish, larger than in the two preceeding, the lateral always linear though often expanded slightly at the colored tip. The cleistogamous flowers have long auricles and not infrequently a stiped aborted ovary is found within the mature fertile one arising from the middle of the torus.

VIOLA VARIABILIS Greene.

Cleistogamous flowers on prostrate branches purplish, auricles very short, fruit ovoid or obovoid, stamens two.

The earliest leaves are reniform crenate and vary to such as our palmately dissected into linear branching lobes. Stamens often with four anthers seldom three, one of which may be aborted.

VIOLA PALMATA Linn. Sp. Pl. p. 933, (1753).

Specimens from woods S. E. of Notre Dame were examined. It grows with *V. variabilis* Greene and *V. populifolia* Greene.

The summer flowers always have but two stamens. In shape these resemble those of the cleistogamous flowers of the preceeding.

VIOLA POPULIFOLIA Greene. Pitt. Vol. III. p. 337, (1896-1898).

Cleistogamous flowers were collected and examined from St. Mary's ravine, Notre Dame, Ind. and Studebaker's woods, South Bend. Examinations in the field were made in the aforesaid places. The plant is very common and produces prostrate cleistogamous flowers sometimes subterranean or at least under leaves and decaying vegetative matter. All the flowers were found to have invariably two fertile stamens.

VIOLA PAPILIONACEA. Pursh. Pl. Am. Sept, Vol. I. 173, (1814).

Plants growing on the edge of the water line of an "Ox-bow-loop" of the St. Joseph River near St. Mary's academy were examined. The plants at high water mark are not infrequently

submerged early in spring and accordingly bloom later, while the flowers are paler often lilac or lavender colored. The stamens of the cleistogamous flowers are two always. Other flowers from plants near Terre Coupée showed similar characters.

VIOLA CUSPIDATA Greene, l.c. Vol. III., Pitt. p. 314, (1896-1898).

Cleistogamous flowers have never been found to have more than two stamens. Rather common plant in the woods of our region. More material of this plant was collected and examined than of any other violet here noted.

VIOLA AFFINIS Le Conte Ann. Lyc. N. York, II. p. 138, (1828).

Cleistogamous flowers of plants from Four Mile Bridge north of Notre Dame were examined. The stamens are always two.

VIOLA CANDIDULA Nwd. Am. Mid. Nat. III., No. 4. p. 85 (1913)

For details of apetalous flowers consult reference cited. Stamens never more than two. The supposed abortive stamen mentioned on page 91 is really the keel or lower petal as elsewhere noted.

VIOLA SAGITTATA Ait. Hort. Kew. 3 p. 287, (1789).

Specimens from Webster's crossing (two separate localities) were examined. The plants invariably have cleistogamous flowers with only two stamens. The cleistogamous flowers of *V. sagittata* are characterized by the long auricles of the sepals almost as in *V. cucullata*. The flowers are at first strictly erect on erect peduncles but about the time of fertilization become recurved, and at the time of dehiscence become again erect.

Subgenus *VERBASCULUM* (Genus of the ancients.)

VIOLA LANCEOLATA Linn. Sp. Pl. p. 934 (1753).

Flowers from plants were examined from various places. Those collected in Brookland, D. C. in summer had but two stamens. Plants collected early in the season at Crumstown and Webster's Crossing, north of Notre Dame, had no trace of petals. From the same place in fall as also from Mineral Springs, the lower petal and traces of lateral petals were sometimes found. Pollen tubes were found in this species as also in *V. primulaefolia* Linn.

VIOLA PRIMULAEFOLIA Linn. Sp. Pl. p. 934, (1753).

Plants were collected in the summer of 1913 near a spring

not far from Terra Cotta, D. C. A considerable amount of cleistogamous flowering material was examined at the time and some preserved for histological study. The stamens were invariably only two.

VIOLA INCOGNITA Brainerd.

Specimens examined both from Mineral Springs (Porter Co.) in fall and from Crumstown, Ind. (St. Joseph Co.) The cleistogamous flowers have short auricles. The stamens are always two only. The keel petal is sometimes present as a spatulate semimembranous growth. The capsules and sepals are mostly purplish dotted especially late in season.

VIOLA PALLENS (Banks) Brainerd. *Rhodora* 7, p. 247, (1905).

Specimens of cleistogamous flowers from Crumstown invariably have but two stamens. No petals were found. Plants at Mineral Springs agree in this respect.

Crocion Nov. Gen.

Type Species *Crocion pubescens* or *Viola pubescens* Ait. Hort. Kew. ed. I., Vol. III., p. 290, (1789).

Plantae caulescentes rhizomate carnosio foliis cordatis vel reniformibus, crenulatis vel dentatis, bracteolis perparvis, petalis flavis striatis, lateralibus quidem barbatis; appendicibus antherarum ovalibus; sepalis quinque, subinaequalibus auriculatis, staminibus quinque subsessilibus, binis inferioribus calcaratis, ovario oblongo vel ovali subtriangulari; staminibus florum cleistogamorum binis tantum, petalis parvis aliquando praesentibus spatulatis vel linearibus.

Caulescent plants not much branched with fleshy rhizomes; leaves cordate or reniform crenulate usually not numerous, the upper short and stalked, the lower with long petioles especially the radical ones; stipules not much dentate or entire bractlets very small. Petals yellow, striate with dark veins, stamen appendages orange oval. Sepals five somewhat unequal slightly auricled. Stamens five subsessile, the two lower slightly spurred. Ovary oblong or oval somewhat triangular. Stamens of the cleistogamous flowers two only with rarely an abortive third. One to three abortive petals often present. The lower spatulate or linear, the lateral linear petals flat.

Crocion eriocarpum (Schwein) Nov. Comb.

Viola eriocarpa Schwein. Am. Jr. Sci. 5. p. 75, (1822).

Viola pubescens var. *scabriuscula* T. & G. Fl. N. Am. 1, p. 142, (1838).

Viola scabriuscula Schwein Britton and Brown Ill. Fl. 2, p. 453, (1897).

Though this and the following violet are caulescent, and the stemmed violets have ordinarily five perfect stamens in their cleistogamous flowers, these so called yellow violets have only two. One or two extra abortive stamens are not unfrequently found but not more than two perfect ones with both anthers.

In a single instance was a third stamen found with an anther having a few pollen grains and the other anther aborted to a capitate gland. The lower petal and one or two lateral ones are occasionally met with.

Crocion pubescens (Ait.) Nov. Comb.

Viola pubescens Ait. Hort. Kew. 3, p. 290, (1789).

Principally because of this remarkable difference in the number of the stamens of the yellow caulescent violets are they here segregated. Though the number of stamens in the cleistogamous flowers of *Chryson biflorum* (Linn.) Spach could not be studied we can not refer the American plants to Spach's genus where they might be thought to belong by habit and other characters. There are, however, differences warranting their being taken out of this genus and put in a new one. More detailed study of the cleistogamous flowers of all the violets alone can decide the standing of those. The stamens in *Crocion pubescens* are only two!

LOPHION Spach, Hist. Nat. Veg. V. p. 516, (1836).

Viola Linn. 1. c. seg.

The cleistogamous flowers of Lophion in the division *Eulophion* do not appear immediately after the season of flowering of the other violets but are a gradual evolution of the spring petaliferous ones. The petals become smaller and finally disappear leaving occasionally only the lower petal, sometimes two lateral ones and often all are wanting. Many of the cleistogamous flowers are abortive, *stamens are always five*, fertile, spatulate, with the terminal appendage shaped nearly as in those of the other groups. Plants of the group of *V. rostrata* cease to bloom soon and produce cleistogamous flowers all the rest of the year until snowfall.

Type *Viola canadensis* Linn.

EULOPHION.

LOPHION CANADENSE Spach, l. c. p. 517.

Viola canadensis Linn. Sp. Pl. p. 936, (1753).

The sepals of the cleistogamous flowers are rather unequal usually, the inner being shorter, all at first firmly pressed against the ovary and stigma, later after fertilization open early, especially at the tips, leaving the apex of the ovary exposed while the five stamens and the petals fall off. Petals which are usually greater, in number (often five), and larger comparably than in the other violets, are not uncommonly present. It is therefore quite inappropriate to call these aestival flowers apetalous, and more correct to call them cleistogamous.

Subgenus **Eucentrion**.

Lophion rostratum (Push.) Nov. comb.

Viola rostrata Pursh, Pl. Am. Sept. p. 174, (1814).

Cleistogamous fruit subglobose obtusely triangular, the carpels broadly carinate, with a slight small channel like depression running from base to apex. Style rather long, recurved at the apex. Sepals subequal lanceolate, glabrous with a rounded short auricle. Later flowers sometimes possessing 1—several lanceolate petals about $\frac{1}{4}$ the length of the free upper end of the sepals. Stamens 5 spoon-shaped, spatulate, fruit and ovaries erect on their peduncles, produced at the ends of the branches all summer and fall until winter.

Subgenus **Rhabdotion**.

Lophion striatum (Ait.) Nov. comb.

Viola striata Ait. Hort. Kew. 3, p. 290, (1789).

Cleistogamous flowers somewhat erect on their peduncles, *with five stamens*; these flowers sometimes with small or abortive petals in transition early in summer. Transition flowers fewer and stages more abrupt; sepals rather long very unequal, the outer longest, linear lanceolate with appendages at insertion giving them a hastate to sagittate appearance, these small appendages are wanting in the inner sepals. Sepals ciliate on margin with long, broad, spreading auricles crose-ciliate, at the free end somewhat pubescent. Style and stigma short closely appressed by the 5 imbricate stamens. Petals in the later summer cleistogamous flowers mostly absent. The anthers of all the cleistogamous flowers of violets are with scarcely any exceptions *two only, instead of four, seldom three!*

MNEMION Spach Hist. Nat. Veg. 5, 510, (1836).

Sufficiently important diagnosis will be seen to be included in the key to the genera at the beginning of this study.

MNEMION TRICOLOR Spach. Hist. Nat. Veg. 5 p. 515, (1836).

Viola tricolor Dodonaeus, Coron. p. 17, (1568). Pempt, p. 158, (1583) also Linnaeus Sp. Pl. p. 935, (1753).

Mnemion arvense (Murray) Nov. Comb.

Viola arvensis Murray, Prodr. Stirp. Goett. p. 73, (1770).

Mnemion Rafinesquii (Greene) Nov. comb.

Viola tenella Muhl. Cat. 26, (1813). Not Poiret (1810).

Viola Rafinesquii Greene, Pitt. IV. p. 9, (1899).

In conclusion we feel that the characters of the cleistogamous flowers of the plants known as violets seem sufficient to warrant the segregation suggested. We have refrained, however, from making any transfers of the numerous species of the groups because we were unable to examine the flowers of them all. We have reason to feel confident that the event may more than prove the suggestion here outlined, and should this be the case the study of violets by their cleistogamous flowers will further the knowledge thereof, and give us at least a very good means of distinguishing the groups.

Dept. of Botany

University of Notre Dame, Ind.

NOTES ON OUR LOCAL PLANTS.—V.

BY J. A. NIEUWLAND.

Subclass 2. DICOTYLEDONEAE.

D. C. Syst. I., (1818), also **Prodr. I.**, p. 1, (1824).

Dicotyledones Haller Enum. Pl. p. XXI., (1753); also Boerhaave Index. Pl. Alt. 2, p. 171, (1727.)

Order 15. PIPERINAE.

Bartling, Ord. Nat. p. 83, (1830).

Piperales Engl. Syllab. p. 93, (1892), also Engler and Prantl. Pflanzenfam. Nachtr. p. 345, (1897).

Family 37. **SAURUREAE** Rich. Anal. (1808), Bartling,

l. c. p. 84, also Lindley, Int. Veg. Syst. p. 172, (1830).

SAURURUS Plumier, Nov. Gen. p. 51, (1703); also Linn. Hort. Cliff. p. 139, (1737), Gen. Pl. p. 108; (1737), p. 159, (1754), Gronovius, Fl. Virg. p. 40, (1739).

Saururus cernuus Linn., Sp. Pl. p. 34, (1753).

Lake Maxinkuckee (Marshall Co.) [H. W. Clarke.] (Marshall Co.) [Hessler], Tamarack (Porter Co.) [Deam], I have found the plant to be abundant in all the countries in the range of this report; notably at Millers and Dune Park (Lake Co.); Tamarack, Mineral Springs, (Porter Co.); Laporte, Michigan City, Sagunay, Smith, Grand Beach (Laporte Co.); in numerous places in St. Joseph Co.; Southeast of Granger and along the rivers in Elkhart Co.; New Buffalo, Stephenville, St. Joseph, Benton Harbor, Galien, Niles, Baroda, Berrien Springs, Munich, Scottdale, Twin Springs, etc. (Berrien Co., Mich.); Bankson Lake, (Van Buren Co., Mich.)

Nos. 10412 Hudson Lake (Laporte Co.), 10436 and 1835 Notre Dame, 1910 Webster's Crossing, (St. Joseph Co.) U. N. D. Herbarium.

Order 16. JUGLANDALES.

Engl. Syllab. ed. 1, p. 93, (1892).

Family 38. **NUCIFERAE**, Ray, Meth. Pl. p. 36, (1682), also Syn. Meth. Britt., p. 438, (1724).

Juglandae DC., Theor. Elem., p. 213, (1813); *Juglandceae* Lindley, Nat. Syst., ed. 2, p. 180, (1836).

Nuculaceae Lam. and DC. ex Dum. Fl. Belg. Stam. p. 15 (1827).

JUGLANS Fuchs, Stirp. Hist. p. 215, (1549), (1542?).

Nux Juglans Pliny. and of many of the pre-Linnaean writers. *Nux* Tour. Els. p. 452 (1694), I. R. H. p. 581 (1700).

Juglans Linn. Gen. p. 291, (1737), p. 460, (1742).

JUGLANS Linn., Gen. p. 431, (1754).

Juglans nigra (P. Hermann) Linn., Sp. Pl. p. 997, (1753).

Nux juglans Virginiana nigra, P. Hermann, Hort. Lugd., p. 453, (1683).

Lake Maxinkuckee (Marshall Co.) [H. W. Clarke]. Nos. 446 and 466 St. Joseph, Mich., also 3270 from near the same place. I have found the tree also in St. Joseph, Laporte, Porter, Berrien, and Van Buren Cos. It is rapidly disappearing and very few large specimens are now to be found. Not much effort is made to plant the tree or protect young specimens, though the tree grows well and propagates fast from seed. It does not find favor as a shade

tree in cultivation as it should and like the butternut is at times afflicted by caterpillars to such an extent as be deprived of its leaves almost entirely. Some years ago trees were cut down in a neighboring city because these caterpillars were found to be strewn on sidewalks and falling from the branches on people passing by. Within a few years even medium sized trees will be very rare in our region. Fifty years ago trees were cut down and used for fuel, so great was their abundance in St. Joseph County.

Juglans cinerea Linn., Sp. Pl. 2nd ed., p. 1415, (1763).

Lake Maxinkuckee (H. W. Clarke); Mineral Springs (Deam). No. 10414 Hudson Lake, U. N. D. Herbarium. Rather more common than the preceding as it is not as useful or valuable for lumber. I have found it quite abundant in all the counties.

HICORIA Raf. Alsog. Amer. p. 65, (1838) changed from the earlier *Hicorius* Raf. Fl. Lud. or p. 109 (1817). *Scorius* Raf. Med. Rep. N. Y. 5, p. 352 (1808). Probably a misprint for *Hicorius* *Carya* Nuttall, Gen. p. 220 (1818) not *Caryon* of the Greeks,—*Juglans regia*: Linn. *Hickorea* Le Conte, Proc. Acad. Phil p. 402, (1850).

Section EUCARYA DC. in Prod. XVI., 2, p. 142, (1864).

Hicoria ovata (Muhl.) Britton, Bull. Torr. Bot. Cl. 15, p. 283, (1888).

Juglans ovata Miller, Gard. Dict ed. 8, No. 6, (1768).

Carya alba Nuttall, Gen. 2, p. 221, (1818), not *Juglans alba* Linn.

Lake Maxinkuckee (H. W. Clarke, Nos. 2144, 2167, Notre Dame, 2109, 2107, 2110, 9021, 90021, 2144A, Rum Villge, south of South Bend, 2110x and 2108, from the same place are quite typical. The others have nuts with thinner husk. The nut itself has a very thin shell and is not notably angled. It may prove a separate variety.

Hicoria laciniosa (Michx. f.) Sarg. Mem. Tour. Bot. Cl. 5, p. 354, (1894).

Carya sulcata Nuttall, Gen. 2, op. 221, (1818 not *Juglans sulcata* Willd.

Juglans laciniosa Michx. f. Arb. Am. 1, p. 109, pl. 8 (1810);

Hicoria sulcata Britton, Mem. Torr. Bot. Cl. 15, p. 283, (1888).

Nos. 2167½, 2173, 2167, Notre Dame, along the St. Joseph River. Becoming scarce.

Hicoria alba (Linn.) Britton, Bull. Torr. Bot. Cl. 15, p. 283, (1888).

Juglans alba Linn., Sp. Pl. p. 997, (1753), *Juglans tomentosa* Lam. Encycl. 4, p. 504, (1797). *Carya tomentosa* Nuttall, Gen. 2, p. 221, (1818).

Lake Maxinkuckee (H. W. Clarke); Nos. 10416, 10426, 10428, N. of Hudson Lake.

Section DRIMOCARIA (Raf.), as a sub-genus (?) Alsog. Am. p. 65, (1838).

Hicoria cordiformis (Wang.) Britton, N. Am. Trees, p. 228, (1908).

Hicoria minima Britton, Bull. Torr. Bot. Cl. 15, p. 284, (1888), *Juglans alba minima* Marsh, Arb. Am. p. 68, (1785), *Carya amara* Nutt. Gen. 2, p. 222, (1818).

Drimocaria minima Raf., l. c.

Lake Maxinkuckee (H. W. Clarke); No. 2107a Rum Village, S. of South Bend. I have met it in all the counties in the region.

Hicoria microcarpa (Nutt.) Britton, l. c. p. 283.

Carya microcarpa Nuttall, Gen. 2, p. 221, (1818), *Juglans alba odorata* Marsh, Arb. Am. p. 68, (1785).

Lake Maxinkuckee (H. W. Clarke), No. 10415 N. of Hudson Lake, [Van Buren Co., Mich.] (H. S. Pepon).

Order 17. MYRICALES.

Engler, in Eng. and Prantl. Pflanzen fam. Nachtr. p. 345, (1897).

Family 39. MYRICACEAE Dumortier, Anal.

p. 95, (1829).

Myricaceae l. c. p. 12, (1829); *Ceriferae* Tidestrom Elysium Marianum (1910); *Myricaceae* L. C. Rich. Anal. Fruit. p. 193, (1808).

COMPTONIA Banks: Gaertner, Fr. and Sem. 2, p. 58, pl. 90, (1791).

Comptonia peregrina (Linn.) Coulter. Mem. Torr. Bot. 5, p. 127, (1894).

Myrica asplenifolia Linn., Sp. Pl. ed. 1, p. 1024, (1753). *Liquidambar asplenifolia* Linn. Sp. Pl. 2, ed. 1418, (1763); *Liquidambar peregrina* Linn. Sp. Pl. p. 999, (1753); *Comptonia asplenifolia* Gaertn. Fr. and Sem. 2, p. 58, (1791).

[Lake Co.] (Hill); Lake Maxinkuckee (H. W. Clarke); Millers (Umbach).

Order 18. SALICINAE.

Bartling, Ord. Nat. Pl. p. 118, (1830).

Salicales Lindley, Nat. Syst. Ed. 2, p. 186, (1836) emend. Engler, Fuhrer. Bot. Gart. Breslau, p. 31, (1886).

Family 40. SALICINEAE L. Rich. ex A. Rich

Now. El. Bot.

ed. 4, p. 560, (1828) also Lindley Nat. Syst. p. 98, (1830), p. 96, (1831); *Salicaceae* Lindley, Nat. Syst. ed. 2, p. 186, (1836).

POPULUS Vergil, Ecl. IX; 41, Pliny, XXIV; 8, Horace, Carm. II; 3.

Leuce Theoc., Ed. II., V., 121; Theophrastus, III., 14; Dioscorides, I, 109. *Populus* of all the pre-Linnaean authors without perhaps a single exception. *Populus* Tour., El. p. 465, (1694), I. R. H. p. 592, (1700); *Populus* Linn., Gen. Pl. p. 307, (1737). *POPULUS* Linn., Gen. Pl., p. 465, (1754); *Populus* Linn., Syst. (1735), Hort. Cliff., p. 460, (1737); *Octima* Raf. Alsog. Am. p. 42, (1838); *Tremula* Dumort., Van Hall, Bijdr. Nat. Wet. 1, p. 46, (1826).

Populus alba Pliny, Nat. Hist., XVI., 23, Horace. Carm. II., 3 Ovid, Epist.

Populus candida Vergil, Ecl. IX., 410, *Populus alba* Dodonaeus, Pempt. p. 835, (1583); Lobelius, Hist. p. 609, (1516), Ruellius, Lonicer, Dalech, Hist. p. 87, (1587), etc., etc.; *Populus alba* Linn., Sp. Pl. p. 1034, (1753).

I have found this tree throughout the region.

Populus bolleana Masters, Gard. Chron. 18, p. 556, f. 96, (1882)

Populus alba bolleana Masters. l. c.

No. 2467. (Cultivated) Notre Dame. The plant which bears the same relationship to *P. alba* that *P. italica* Moench, the Lombardy poplar bears to *A.* or *P. nigra* Linn., does not spread as rapidly as the common white poplar. It is very susceptible to attacks of "borers" and other animal parasites and can scarcely be said on this account to be quite hardy.

Populus grandidentata Michx., Fl. Bor. Am. p. 243, (1803).

Lake Maxinkuckee (H. W. Clarke); Mineral Springs, (Deam); Nos. 499, 448, 450, Notre Dame; 472, 3349, 3240, St. Joseph, Mich. Observed in all the counties.

Populus tremuloides Michx. l. c.

Lake Maxinkuckee (H. W. Clarke) (Deam), Mineral Springs

(Deam); [Lake Co.] (Deam); Nos. 3325, 3318, St. Joseph, Mich. (Tidestrom); Nos. 811, 2800, Notre Dame; 10367 Chain Lakes (St. Joseph Co.). Observed in all the counties.

Populus heterophylla Linn., Sp. Pl. 1034, (1753).

Aigiros heterophyllos Raf. Alsog. p. 42, (1838).

Lake Maxinkuckee (H. W. Clarke). Found by Dr. Greene and myself southwest of South Bend in low ground not far from the Sumption Prairie Road. Also in Berrien Co., Mich.

AIGEIOS Homer, Odys., VII, 106, XVII: 208 Hesiod, Scut. Herc. 377 Theophrastus, III: 14: Dioscorides, I.: 144.

Populus Vergil, Pliny, Tour., Linnaeus in part *Aigeiros* Tidestrom, Elysium, Mareanum, I., p. 15, (1910) not *Aigiros* Raf. Alsog. Am. p. 42, (1838) = *Populus heterophylla* Linn.

Aigeiros deltoides (Bartr.) Tidestrom. Elysium, Marianum, II. p. 16, (1910).

Populus deltoides Bartr; Marsh., Arb. Am. p. 106, (1785) *Populus canadensis* Moench. Weisents. p. 81, (1785) *Populus marilandica* Poir. in Lam., Encyc. Suppl. 4: p. 378, (1816)? *Populus monilifera* Ait., Hort. Kew. 3 p. 406, (1789) *Populus angulata* L. c. p. 407, *Populus carolinensis* Moench, Verz. Pl. 81, (1789), *Aigeiros virginiana*. Tm. l. c., *Populus virginiana* Fougier, Mem. Soc. Ag. Par. 1786, 87, (1787)

Nos. 3343, 3401, St. Joseph, Mich. (Tidestrom); Lake Maxinkuckee (H. W. Clarke), (Deam); No. 475, St. Joseph, Mich., 450, 11159, Notre Dame. I have seen it in every county.

Aigeiros nigra (Pliny).

Populus nigra Pliny, Nat. Hist. XVII: 23, XVI.: 23, Ruellius Nat. Stirp., p. 277, (1543), also Matthioli, Camerarius, Dodonaeus, Pempt. p. 836, C. Bauhin, Pin. p. 429, Tour. Els. p. 465, (1694), I. R. H. p. 592, (1700), etc., etc. **POPULUS NIGRA** Linn., Sp. Pl. p. 1034, (1753).

Sometimes cultivated and may escape, though the following which by some is considered but a variety is oftener found.

Aigeiros italica (Duroi) Tm., l. c.

Populus italica Moench, Weisenst. p. 79, (*Populus nigra italica* Duroi, Harbk. Baumz. 2: p. 141, (1772); *Populus pyramidalis* Roz. Cours. d'Agric. 7: p. 619; *Populus dilatata* Ait., Hort. Kew. 3, p. 406.

Found throughout the range, but perhaps always in cultivation or near houses.

Aigeiros candicans (Ait.). *Populus candicans* Ait. Hort. Kew. 3, p. 406, (1789). *Populus balsamifera* var. *candicans* A. Gray, Man. ed. 2, p. 419, (1856).

Found at South Haven by Bailey. I have not found it south of the Michigan boundary line except as one specimen west of South Bend in cultivation in a farm yard. It grows wild near Rochester, Michigan near Detroit, whence I have herbarium specimens collected by myself.

SALIX Vergil, Ecl., II., 83, V: 16, X: 140. Georg., IV: 184, Culex, 54. Pliny, Nat. Hist. XXI: 20.

Itea Homer, Il., §, 350, Odys. K, 510. Theophrastus, III: 13, Dioscorides I: 115. *Siler* Vergil, Georg., II: 12.—*Salix vitellina* Linn. *Salix* Varro, T. Cato. and of all the pre-Linnaean authors none perhaps excepted. *Salix* Tour. Els. p. 464 (1694), I. R. H., p. 580, (1700). Linn., Gen. p. 300, (1737), Syst. (1735). **SALIX** Linn., Gen. p. 447, (1754). *Amerina* Pliny, XXIV: 9.

Salix vitellina Pliny, XVI: 37, Linn., Sp. Pl. 1442 ed 2, (1763). **SALIX ALBA** Linn., Sp. Pl. p. 1021, (1753). *Salix perticalis* Columella *Salix candida* Pliny l. c. Ruellius. Nat. Stirp. p. 251, (1543).

St. Joseph, Mich. (Tidestrom): Lake Maxinkuckee (H. W. Clarke). Found in every county.

Salix fragilis Linn., Sp. Pl. p. 1017, (1753).

Lake Maxinkuckee (H. W. Clarke); St. Joseph, Mich., (Tidestrom): Notre Dame, No. 491.

Salix babylonica Linn., Sp. Pl., p. 1017, (1753).

Cultivated and often persisting in places when left to itself.

Salix lucida Muhl., Neue Schrift. Ges. Nat. Fr. Berlin, 4: p. 239, pl. 6, f. 7, (1803).

[Lake Co.] (Hill); Dune Park [Lake Co.] (A. Chase); Clarke, Ind. [Lake Co.] (Umbach); [Laporte Co.] (Deam); Benton Harbor and St. Joseph, Mich., (Tidestrom); No. 484, St. Joseph, Mich.; No. 9150 Notre Dame.

Salix interior Rowlee, Bull. Torr. Bot. Club, 27, p. 253, (1900).

Salix longifolia Muhl., l. c. p. 238, pl. 6, f. 6. not Lam. (1778).

[Laporte Co.] (Deam); Lake Maxinkuckee (H. W. Clarke); St. Joseph and Benton Harbor, Mich. (Tidestrom); Nos. 213, 491, Notre Dame.

Salix pentandra Linn., Fl. Lapp. p. 370, t. 8, f. 3, (1737); also Sp. Pl. p. 1016, (1753).

No. 10108 Mineral Springs [Porter Co.]; It grows at Notre

Dame near St. Joseph's Lake, but perhaps cultivated, or escaped from plants formerly cultivated.

Salix falcata Pursh Fl. Am. Sept. 2, p. 616, (1814).

Salix nigra Marsh Arb. Am. p. 139, (1785), not *Salix nigra* Pliny and of the pre-Linnaeans.

Dune Park (A. Chase); St. Joseph, Mich. (Tidestrom); Lake Maxinkuckee (H. W. Clarke); No. 465, St. Joseph, Mich.

Salix exigua Nuttall, Sylva 1, 75, (1842).

Salix fluviatilis exigua Sarg. Silva, 9, p. 124, (1846).

Nos. 446, 448, Notre Dame, 445, 803, Webster's Crossing, North of Notre Dame.

Salix cordata Muhl., l. c. p. 236, pl. 6, f. 3.

Salix angustata Pursh l. c. p. 613, *Salix cordata angustata* Anders., Vet. Acad. Handl. 6, 1, p. 159, (1867).

Whiting, Ind. [Lake Co.] (Higdon and Raddin); [Lake Co.] (Hill); Lake Maxinkuckee (H. W. Clarke).

Salix syrticola Fernald, Rhodora 9, 146, (1907).

Salix adenophylla of Am. authors not Hooker, Fl. Bor. Am. 2, p. 146, (1839).

[Lake Co.] (Hill) (Deam); [Porter Co.] (Cowles); Pine, Ind. [Lake Co.] (Umbach); Nos. 2645 Millers, Ind. [Lake Co.], 3348 St. Joseph, Mich. I have found it also in Laporte Co., at Tamarack and Grand Beach and in Berrien Co., at Stephenville.

Salix amygdaloides Anders., Ofv. Handl. Vet. Akad. p. 114, (1858).

Clarke, Ind. [Lake Co.] (Umbach); [Lake Co.] (Deam); Lake Maxinkuckee (H. W. Clarke).

Salix glaucophylla Bebb. in A. Gray, Man. Ed. 6, p. 483, (1889).

[Lake Co.] (Hill); [Porter Co.] (Cowles); Millers, Ind. (Umbach); St. Joseph, Mich., (Tidestrom); Nos. 484, 11082, St. Joseph, Mich. I found it at Webster's Crossing, North of Notre Dame.

Salix viminea Pliny, l. c.

SALIX VIMINALIS, Linn., Sp. Pl., p. 1021, (1753) South Haven, Mich., (Bailey); Escaped from Notre Dame from a plot where it is cultivated for wickerware.

Salix purpurea Linn., Sp. Pl. p. 1017, (1753). St. Joseph, St. Joseph, Mich. (Tidestrom).

Salix humilis Marsh, Marsh. Arb. Am. p. 140, (1785).

[Laporte Co.] (Barnes); [Lake Co.] (Hill); Mineral Springs, (Deam); Nos. 11133, 446y, Notre Dame.

Salix tristis Ait. Hort. Kew. 3, p. 393, (1789).

Salix humilis var. *tristis* Griggs. Proc. Ohio. Acad. 4 p. 301, (1905).

Pine [Lake Co.] (Higdon and Raddin); [Lake Co.] (Hill); Clarke, Ind., (Umbach) Lake Maxinkuckee (H. W. Clarke).

Salix discolor Muhl., l. c. p. 234 pl. 6, f. 1.

Salix eriocephala Michx., Fl. Bor. Am. 2, p. 225, (1803).

Salix prinoides Pursh, Fl. Am. Sept. p. 613, (1814).

Lake Maxinkuckee (H. W. Clarke).

Salix sericea Marsh, l. c. p. 140.

Lake Maxinkuckee (H. W. Clarke); South Haven, Mich., (Bailey).

Salix petiolaris J. E. Smith, Trans. Linn. Soc. 6, p. 122, (1802).

Salix gracilis Anders., Proc. Am. Acad., 4, p. 67, (1858).

Colehour [Lake Co.] (Higdon and Raddin).

Salix bebbiana Sarg., Gard. and Forest. 8, p. 463, (1895).

Salix rostrata Richards. Frank. Jr. App. p. 753, (1823), not Thuill., (1799).

Lake Maxinkuckee (H. W. Clarke); Clarke, Ind., [Lake Co.] (Umbach); St. Joseph and Benton Harbor, Mich. (Tidestrom); No. 541 Chain Lakes.

Salix candidula Nom. Nov.

Salix candida Fluegge, Willd., Sp. Pl. 4, p. 708, (1806), not *Salix candida* Pliny or Ruellius above = *Salix vitellina*.

[Lake Co.] (Hill); Millers, Ind., (Higdon and Raddin); Clarke, Ind. (Umbach); Nos. K8 Hudson Lake, Sagunay [Laporte Co.]: 9738 Dune Park, 2335 Bankson Lake [Van Buren Co.]. I have found it in all the tamarack swamps in the range, Mineral Springs, Chain Lakes, Stephenville, Mich., Tamarack, [Laporte Co.] St. Joseph Co. 8 miles South west of South Bend on the Turkey Creek Road. Lakeville and North Liberty.

Salix pedicellaris Pursh, Fl. Am. Sept. p. 611, (1814).

Salix myrtilloides var. *pedicellaris* Anders. Vet. Acad. Handl., 6 : 1, p. 96, (1867).

Pine, Ind. [Lake Co.] and Casella, Ind (Higdon and Raddin); Millers, Ind. (Hill); [Lake Co.] (Umbach); Lake Maxinkuckee (H. W. Clarke).

Order 19. AMENTACEAE.

(Ray, Boerhaave) Gmelin, Fl. Sibir 1, p. 150, (1747).
also Linn., Phil. Bot. p. 28, (1751), Jussieu. Gen. p. 407, (1789).
Bartling, Ord. Nat. Pl. p. 96, (1830). *Juliferae* Haller. Fl. Helvet,
II., p. 292, (1768), *Juliflorae* Endl., Geh. p. 270, (1837), *Cupuliferae*
Benth. in Benth. and Hooker, Gen. III., p. 402, (1830), *Fagales*
Engler, l. c. p. 31, (1886), also Engler and Prantl Pflanzenf. Nachtr.
p. 345, (1897) *Venosae* Riechenbach, Fl. Ger. Clav. XIV. (1830).

Family 41. **CORYLACEAE** Mirbell ex S. F. Gray,
Nat. Arr. Br. Pl. II. p. 244, (1821) in part, *Corylideae* F.
Gray, and *Cupulaceae* Rich. ex. S. F. Gray, l. c.

CARPINUS Pliny XVI : 15.

Carpinus Dodonaeus. Pempt., 6 : 4 : 19, Caesalpinus, De
Plantis. p. 38, (1583).

Lobelius. Obs. p. 607, Adv. p. 440, (1576), Ruellius Nat.
Stirp. p. 137, (1543) : Tour Els. p. 453, (1694), I R. H. p. 582,
(1700) Linn., Gen. p. 292, (1737), *CARPINUS* Linn., Gen. p. 432
(1754); *Ostrya* Linn., Syst. (1735) in part.

Carpinus caroliniana Walter, Fl. Car. p. 236, (1788).

Millers, Ind. (Higdon and Raddin); Lake Maxinkuckee
(H. W. Clarke); Mineral Springs, (Deam); No. 10299 Rum Village,
South of South Bend, Ind. [St. Joseph Co.] I have found it in all
the counties.

OSTRYA Pliny, XIII : 21.

Ostrya Thalius, Sylva Herc. p. 83, (1588) also Gesner;
Caesalpinus De Plantis p. 39, (1583); *Ostrys* Theophrastus, III :
10; *Ostrya* Linn., Syst., (1735) in par. *Carpinus* Linn., Gen.,
p. 292, (1737), o. 432, (1754). Hort. Cliff. p. 447, (1737). *Ostrya*
Micheli. Gen. p. 223, (1729); C. Bauhin, Pinax p. 427, (1623).

Ostrya virginiana (Miller) Willd., Sp. Pl. 4, o. 469, (1768)

Carpinus virginiana P. Miller, Gard. Dict. 8 ed. (1769).

Lake Maxinkuckee (H. W. Clarke); [Porter Co.] (Deam);
[Laporte Co.] (Deam); St. Joseph, Mich. (Tidestrom); Nos. 4,
804, Notre Dame, 814 Lydick, Ind. [St. Joseph Co.], 7748 St.
Joseph, Mich. Found in the other countries by me also.

CORYLUS Vergil, Ecl. I : 14, II : 3; Georg., II., II : 65,
299, also Pliny, XVI : 18. Caesalpinus, De Plantis, p. 38, (1588),
also Dodonaeus, Ionicer, Castor Durante, Turner, Lobelius,
V. Cordus, Gesner, Tragus, Matthioli, etc., etc. *Avellana* or *Nux*

Avellana Brunfels, Fuchs, Camerarius, etc. *Corylus* Tour. Els. p. 453, (1694), I. R. H., p. 581, (1700), Linn., Syst., (1735), Gen. p. 293, (1737). *CORYLUS* Gen. p. 433, (1754).

* *Corylus americana* Walter, Fl. Car. p. 236, (1788).

Lake Maxinkuckee (H. W. Clarke). I have found it abundant throughout the range but not fruiting in woods.

Family 42. **BETULACEAE** C. A. Agardh. Aphor. p.

208, (1825) also Bartling, l. c. p. 99.

BETULLA Pliny XVI: 30.

Betula Tragus, Matthioli, Dodonaeus, Anguillara, Bellonius, Lonicer, Lobelius, Castor Durante, Gesner, Thalius, etc., *Betula* Tour., Els. p. 460, (1694), I. R. H. p. 588, (1700): Linn. Syst. (1735) *stricto sensu*, Gen. p. 285, (1737), *stricto sensu*, *Betula*, Gen. p. 422, (1754) in part.

Betulla populifolia Marsh, Arb. Am. p. 19, (1785), (cor.)

Betula alba var. *populifolia* Spach. Am. Sci. Nat. II., 15 p. 187, (1841).

Pine [Lake Co.] (Higdon and Raddin); [Laporte Co.] (Deam): 820 Notre Dame.

Betulla papyrifera Marsh. l. c. (cor.)

Betula papyracea Ait. Hort. Kew. 3, p. 337, (1789).

[Lake Co.] (Deam); Lake Maxinkuckee (H. W. Clarke); Mineral Springs (Deam); Pine [Lake Co.] (Umbach). Found also in St. Joseph, Laporte, and Berrien Co.

Betulla nigra Linn., Sp. Pl. p. 982, (1752).

[Starke Co.] (Deam); Lake Maxinkuckee (H. W. Clarke); No. 806 Notre Dame.

Betulla lenta Linn., Spl Pl. p. 983, (1753).

South Haven, Mich. (L. H. Bailey). Found also by Dr. Greene and myself three miles south of Lakeville, Ind

Betulla lutea Michx. f., Arb. Am. 2, p. 152, pl. 5, (1802), (cor.)

Lake Maxinkuckee (H. W. Clarke); [Laporte Co.] (Deam); Mineral Springs (Deam): Nos. 9157 Sagunay [Laporte Co.] 9097 Chain Lakes [St. Joseph Co.]. The tree has been found by me in Berrien, Van Buren, Porter, Laporte, Lake, Cos. It is often found in Tamarack swamps or on their borders, and not infrequently supercedes the larches as they disappear by drainage.

Betulla pumila Linn., Mant., p. 124, (1767).

[Lake Co.] (S. Coulter); Millers, Ind. (Babcock), (Umbach);

Lake Maxinkuckee (H. W. Clarke); Mineral Springs (Deam); Nos. 17, 880, 60, 9432 Chain Lakes, 38 N. of Notre Dame. Found also in Van Buren, Berrien, Laporte, Porter, and Lake Cos.

ALNUS Pliny XVI : 24.

Alnus Brunfels, Tragus, Matthioli, Anguillara, Dodonaeus, Turner, Lonicer, Lobellus, Caesalpinus, Castor Durante, Thalius, Tabernaemontanus, etc., etc. *Alnus* Tour., Fls. p. 459, (1694), I. R. H p. 587, (1700). Linn. Syst. (1735), Gen., p. 285 (1737), Hort. Cliff. p. 441 (1737) *Betula* Gen. p. 442 (1754) in part. *Alnus* P. Miller, Abr. Gard. Dict. (1763), Hill, Br. Herball, p. 510 (1756).

ALNUS Duhamel, Arb. et Arbustes, p. 41 et seq. (1755). *Clethra* Homer, Odys. E., 64 and the Greeks *Clethros* Theophrastus III: 114.

Alnus incana C. Bauhin ex J. Bauhin Hist. 1. c.

Alnus hirsuta C. Bauhin ex J. Bauhin, Hist. 1. c.

Alnus incana (Linn.) Willd., Sp. Pl. 4 : p. 335, (1805).

Betula Alnus var. *incana* Linn., Sp. Pl., ed. 2, p. 1395, (1763).

[Lake and Porter Cos.] (S. Coulter) [Laporte Co.] (Deam); Clarke, Ind. (Umbach); Mineral Springs (Deam); [Lake Co.] (Deam).

Alnus rugosa (Duroi) Spreng. Syst. 3, p. 848, (1826).

Alnus serrulata Willd., Sp. Pl. 4, p. 336, (1805). *Betula Alnus rugosa* DuRoi, Hanbk. 1, p. 112, (1771).

Edgemoor, Ind. [Lake Co.] (Baltwood); [Starke Co.] (Deam); Nos. 11648, 11649 Mineral Springs. Found also in Berrien, St. Joseph, Laporte and Lake Cos.

Alnus vulgaris (Clusius) ex C. Bauhin Pinax p. 428, (1623); also J. Bauhin Hist. 6, p. 157, (1650).

ALNUS VULGARIS Hill, Br. Herb. p. 510, (1756), *Alnus glutinosa* Gaertn. Fr. and Sem. 2, p. 54, (1791); *Betula Alnus* Linn., Sp. Pl. p. 983, (1753), *Alnus glutinosa* Linn. and Hesselgren, Pan Suecus, (Am. Acad. 2, p. 259, (1751).

(No. 10389, Notre Dame, Ind. Cult.?)

Family 43. **GLANDIFERAE** Theodore Gaza, de Hist. and Causis. Plantar (1529) (1483?) also Caesalpinus De Plantis p. 31, (1583). *Glandiferi* Pliny, XVI : 3 and 4 (!) *Cupuliferae* L. C. Rich. Anal. Fruit, p. 32 and 92, (1808). Lindley, Syst. ed. 2, p. 170, (1836); *Fagineae* Consp. p. 83, (1828). Enum. XVII., (1833). *Cupuliferae* Bartl. Ord. Nat. p. 99, (1830) in part. also

Dumortier Com. Bot. p. 53 (1823). *Fagaceae* Drude Phan. p. 409, (1879). A. Br. Ascherson, Fl. Pv. Brand. I, p. 62, 615 (1864). *Quercineae* Dumortier as a tribe.

FAGUS Vergil. Ecl., I : 1, II : 3, III : 12, Georg., I : 177, II : 71. Pliny XVI : 10, Pall. Novemb. 15.

Fagus Brunfels, Tragus, Matthioli, Anguillara, Dodonaeus, Gesner, *Pfegus* Dioscorides I : 144, *Oxya* Theophrastus, III : 10. *Fagus* Brunfels, Tragus, Matthioli, Anguillara, Dodonaeus, Gesner, Lonicer, Lobelius Caesalpinus, Castor Durante, Tabernaemontanus, etc., Tour., Els., p. 455, (1694), I. R. H. p. 584, (1700), Linn., Syst. (1735), Gen., p. 292, (1737) in part.

FAGUS Gen. p. 432, (1754).

Fagus grandifolia Ehrh., Beytr. Naturk. 3, p. 22, (1788).

Fagus americana Sweet Hort. Brit. p. 370, (1826). *Fagus ferruginea* Ait., Hort. Kew., 3, p. 362, (1789).

[Laporte Co.] (Deam); Lake Maxinkuckee (H. W. Clarke), Mineral Springs (Deam); No. 2738 Pine Station on the Wabash R. R. [St. Joseph Co.]; found in every county.

QUERCUS (Lucretius) Vergil, Ecl., I : 17, IV : 30, VI : 13; Georg. I : 349, II : 16, III : 332; Culex, 132. Cat. XI : 17; Pliny XVI:1 etc. *Drys* Homer — : 12, also Hesiod, Aristophanes. Theocritus, Eid. I : 23, V : 45, VIII : 79 etc. *Quercus* Lobelius, Gesner, Valerius Cordus, Acosta, Anguillara, Bellonius, Caesalpinus, etc., etc.

[*Aesculus* Pliny XVI. 6 (= *Q. Aesculus*): *Ilex* Vergil, Columella, (= *Q. Ilex*). This is the *Prinus* of Hesiod Theophrastus, Dioscorides, and the Greeks. *Suber* Pliny = *Phellos* Theophrastus (= *Q. Suber*) *Aigilops* Theophrastus (= *Q. Aigilops*) *Robur* of the latins (= *Q. Robur*).] *Cerris* Pliny (= *Quercus Cerris*) *Quercus* Tour., Els p. 454, (1694), I. R. H. p. 582, (1700) exclusive of *Ilex* and *Suber* Tour. which are separate genera with this author *Quercus* Linnaeus, Syst. (1735), Gen. p. 291, (1737), *QUERCUS* Linn., Gen., p. 431, (1754).

Quercus alba Banister in Ray's Hist. Pl. p. 1928 et seq. (1688).

Quercus alba Linn., (1688) Sp. Pl., p. 996, (1753).

[Laporte Co.] (Deam); Lake Maxinkuckee (H. W. Clarke). I have found it in all the counties as one of the commonest species.

Quercus minor (Marsh.) Sargent Gard. For. 2 p. 471, (1889).

Quercus alba minor Marsh., Arb. Am. p. 120, (1789).

Quercus stellata Wang. Amer. p. 78 pl. 5 f. 15, (1787), *Quercus obtusiloba* Michx., Hist. Chen. Am. I., p. I., (1801).

Whiting, Ind. (Higdon and Raddin), No. 10207 Mineral Spring.

Quercus bicolor Willd. Neue Schrift. Ges. Nat. Fr. Berlin, 3, p. 396, (1801).

Mineral Springs (Deam); [Starke Co.] (Deam) Nos. 475³⁴ St. Joseph, Mich., 1917, 583 Notre Dame along the St. Joseph River.

Quercus lyrata Walt., Fl. Car. p. 235, (1788).

Lake Maxinkuckee (H. W. Clarke).

Quercus macrocarpa Michx., Hist. Chen. Am., 2, p. 23, (1801).

Quercus olivaeformis Michx. f. Hist. Arb. Am. 2, pl. 2, (1812).

Lake Maxinkuckee (H. W. Clarke); [Starke Co.] (Deame); [Laporte Co.] (Deam); St. Joseph, Mich. (Tidestrom). I have found it South of South Bend, Ind., St. Joseph Co. Not as common as formerly.

Quercus Michauxii Nuttall, Gen., 2, p. 215, (1818)

[Van Buren Co.] (H. S. Pepoon).

Quercus prinoides Willd., l. c. p. 397, (1901).

Lake Maxinkuckee (H. W. Clarke).

Quercus imbricaria Michx., Hist. Chen. Am. p. 9, pl. 15, 16, (1801).

Nos. 2142 Sumption Prairie Road S. of South Bend, Ind.; 9522, 10442 Notre Dame; 584 near marsh on I. I. I. R. R. Notre Dame. Found also in Porter and Laporte Cos.

Quercus ellipsoidal E. J. Hill, Bot. Gaz. 27, p. 204, (1899).
St. Joseph, Mich. (Tidestrom).

Quercus velutina Lam., Encycl. 1, 721, (1783).

Quercus tinctoria Bartram, Travels p. 37, (1791); *Quercus coccinea* var. *tinctoria* A. Gray, Man. Ed. 5, p. 454, (1867).

Lake Maxinkuckee (H. W. Clarke); [Laporte Co.] (Deam).

Quercus coccinea Wang. Amer. p. 44, pl. 4, f. 9, (1787).

No. 9348 Notre Dame, Ind.

Quercus palustris Du Roi, Hanbk., 2, p. 268, pl. 5, f. 4, (1772).
[Lake Co.] (Hill); Lake Maxinkuckee (H. W. Clarke).

Quercus rubra J. Banister, Cat. in J. Ray. Hist. l. c. (1680).

Quercus rubra Linn., Sp. Pl. p. 996, (1753).

Lake Maxinkuckee (H. W. Clarke); [Laporte Co.] (Deam).
No. 2669 Sagunay [Laporte Co.]; seen also in Elkhart, St. Joseph, Van Buren, Porter and Berrien Cos.

Order 20. URTICALES.

Engl. Syllab. ed. 1, p. 95, (1892).

Family 44. **ULMACEAE** Mirbel, El., II., p. 905, (1815).
also Lindley Nat. Syst., Ed. 2, p. 178, (1836); Planch in DC.
Prodr. XVII., p. 151, (1873).

ULMUS Vergil, Ecl. II : 70, V : 3, Georg. I : 170, II : 18, 72, 222, IV : 144, also Catullus, Columella, V : 6, Pliny XVI : 17, Claudian. *Ptelea* Homer. Il., Φ, 350, Hesiod, Theophrastus III : 14 Dioscorides, I : 111, Theocritus, Eid. I : 21, VII : 8. Claudius, etc., *Ulmus* Tragus, Matthioli, Dodonaeus, Bellonius, Turner, Cordus, Gesner, Ionicer, Lobellius, Caesalpinus, Camerarius, Clusius, Anguillara, Castor Durante, Tabernaemontanus, etc., etc. *Ulmus* Tour., Els., p. 473, (1694), I. R. H., p. 601 (1700), Linnaeus, Syst., (1735), Gen. p. 68, (1737). *ULMUS* Sen., p. 106, (1754).

Ulmus americana Linn., Sp. Pl., p. 226, (1753).

Lake Maxinkuckee (H. W. Clarke); No. 7721 St. Joseph, Mich. Found in all the counties. It seems to be the healthiest of our trees under the rapidly changing conditions due to deforestation in our area.

Ulmus Thomae Sarg., Silva 14, p. 102, (1902). em.

Ulmus racemosa Thomas, Am. Jr. Sci. 19, p. 170, (1831). not *Ulmus racemosa* Borck.

Nos. 11475, 11688, Studebaker's Woods, South of South Bend, Ind.; [7380 Kalamazoo, Mich. [Kalamazoo Co.] (Tuthill.)]. I have found this plant only in the above mentioned place where it is quite abundant growing with *U. americana* and *U. fulva*. Doubtless it will be found in other large woods.

Ulmus fulva Michx., Fl. Bor. Am., 1, p. 172, (1803).

Lake Maxinkuckee (H. W. Clarke); No. 9369 Notre Dame, Ind. Rather abundant in Studebaker's Woods South Bend, Ind. Many of the younger trees are annually injured by the removal of large strips of bark for medicinal purposes. Found also in Elkhart, Laporte, Porter, Berrien and Van Buren Cos.

CELTIS Pliny XIII : 17, also *Celtis* Gaza, Turner, *Lotos* Dioscorides I : 134, also Pliny l. c. *Celtis* Tour., p. 485, (1694). I. R. H. p. 612, (1700): Linn., Gen. p. 337, (1737), *CELTIS* Linn., Gen. p. 467, (1754).

Celtis occidentalis Linn., Sp. Pl. p. 1044, (1753).

[Starke Co.] (Deam); Millers, Ind. (Higdon and Raddin); Found in Laporte and St. Joseph Co. also.

Celtis occidentalis var. **pumila**.

Celtis pumila Pursh. Fl. Am. Sept., p. 200, (1816).

Lake Maxinkuckee (H. W. Clarke); [Lake Co.] (Deam, Hill).

Celtis crassifolia Lam. Encycl. 4, o. 138, (1797).

No. 10388 Notre Dame, Ind.

Family 45. **MORACEAE** Lindl., Veg. Kingd. p. 266, (1847) ex Engler and Prantl. Pflanzenf. III., 1, p. 66, (1888).

MORUS Columella, V : 10, X : 402, Palladius, Ins. 127.

Morea and *Sykaminea* Dioscorides, I : 180. *Morum* Vergil.

Morus Brunfels, Tragus, Matthioli. Fuchs, Dodonaeus, Turner, Lonicer, Rauwolf, Caesalpinus, Tabernaemontanus, Gesner, Camerarius. Cordus Lobelius, etc. *Morus* Tour., Els., p. 462, (1694), I. R. H. p. 589, (1700); Linn., Syst. (1735), Gen. p. 283, (1737). **MORUS** Linn., Gen. p. 424, (1754).

Morus rubra Linn., Sp. Pl. p. 986, (1753).

Lake Maxinkuckee (H. W. Clarke) (Deam). Scarce. One large tree on Notre Dame grounds.

Morus alba Matthioli Com. in Diosc. p. 149, (1554), Anguilara, Camerarius Tabernaemontanus, Gesner, Rauwolf, etc.

Morus candida Dodonaeus, Pempt., 6 : 3 : 18. (1583) also Valerius Cordus, Lobelius Obs. p. 610, (1576).

Morus alba Linn., Sp. Pl., p. 986, (1753).

No. 689 Studebaker's Woods. Escaped and spreading from plants introduced at Notre Dame.

TOXYLON Raf., Am. Monthly Maf. 2, p. 118, (1817).

Machura Nuttall, Gen. 2, p. 333, (1818).

Toxylon pomiferum Raf. l. c.

Maclura aurantiaca Nuttall, l. c. p. 234.

Maclura pomifera Schneider. Handl. Laubh. 1, p. 806, (1906).

No. 9562, Notre Dame, Indiana. Escaped from plants introduced for hedges.

Family 47. **CANABINACEAE** Lindley. Veg. Kigd. p. 265, (1846).

Lupulus J. de Manliis ex Brunfels Herb. Viv.

Ic., 2, p. 169, (App.) (1531) also Matthioli, Turner, Dodo-

naeus, Clusius, Talemaemontanus, Tragus, Lonicer, Castor Durante, Lobelius, Camerarius, Ruellius, etc.

Lupulus Tour. Els. p. 427, (1694), I. R. H. p. 535, (1700). *Humulus* Linn. Ssyt., (1735), Gen. p. 304, (1737). HUMULUS Gen., p. 453, (1753). *Lupulus* Gaertner, Fruct. I, p. 358, (1788).

Lupulus salictarius Dodonaeus. Trium Prior.

Stirp. Hist. p. 386, (1553), *Lupulus salictarius* Tragus Lonicer, Castor Durante. *Lupulus communis* Gaertner, l. c. p. 75. HUMULUS LUPULUS Linn., Sp. Pl. p. 1028, (1753), *Humulus americanus* Nuttall, Jour Acad. Phil. VI p. 181, (1840). *Humulus salictarius* Linn. and Hesselgren. Pan Suecus, Am. Adad. 2 p. 260, (1751).

[Lake Co.] (Deam): No. 11676 N. of Notre Dame near Four Mile Bridge. Found also at St. Joseph, Mich., and near Michigan City [Laporte Co.].

CANNABIS Dioscorides III : 157, Pliny XIX : 4, XIX : 9, XXI : 23.

Cannabis Brunfels, Matthioli, Anguillara, Iacuna, Turner, Lonicer, Lobellius, Caesalpinus, Castor Durante, Tabernaemontanus, Lonicer, Lobelius, Caesalpinus, Castor Durante, Tabernaemontanus, Gesner, Fuchs, Tragus, Dodonaeus, Marcellus Vergilius, etc., etc. *Cannabis* Tour., Els., p. 427, (1694), I. R. H., p. 531, etc., etc. *Cannabis* Tour., Els., p. 427, (1694), I. R. H., p. 531, (1700), Linn., Syst., (1735), Gen. p. 304, (1737). CANNABIS Linn., p. 453, (1754).

Cannabis sativa (Dioscorides) Marcellus Vergilius, Comment. Diosc. p. 453, (1529) also Conrad Gesner, Hist. Plant. p. 30 b. (1541), Ruellius, Diosc. Mat. Med. p. 298, (1547), also Fuchs, Cordus, Dodonaeus, C. Bauhin Pinax p. 320, (1623) also Tour. Els. and I. R. H. l. c. CANNABIS SATIVA Linn., Sp. Pl. p. 1027, (1753).

[Lake Co.] (Deam); Lake Maxinkuckee (H. W. Clarke): Nos. 11518 Notre Dame near St. Joseph River, 9376 N. of Notre Dame at Webster's Station. Found also at St. Joseph, Mich., along the Pere Marquette R. R.

Family 48. URTICEAE Ventenat. Tabl. Reg. Veg.

p. 524, (1794).

Urticaceae Endl., Gen. p. 282, (1837).

URTICA Pliny XXII: 13.

Acalyphæ Dioscorides IV : 94, Theophrastus VIII : 7. *Urtica*

Brunfels, Fuchs, Dodonaeus, Lonicer, Thalius, Tabernaemontanus, Tragus, Matthioli, Cordus, Gesner, Caesalpino, Lobelius, Castor Durante, Clusius, Turner, Camerarius, etc., etc. *Cnida Hippocrates* *Urtica* Tour., Els. p. 426, (1694), I. R. A., p. 534, (1700) Linn., Syst., (1735), Gen. Pl. p. 283, (1737), *URTICA* Linn., p. 423, (1754).

Urtica major (Brunfels) Fuchs, Stirp. Hist. Jr. 59, (1549) (1542?) Plant, Hirt. p. 40b, (1546). also Dodonaeus, Tabernaemontanus, Thalius, Harc. p. 131, (1588), C. Bauhin, Phytopinax p. 438, (1596), etc.

Urtica rubra Tabernaemontanus, Gesner.

Urtica perennis Linn. and Hessel., Pan Suecus., Am. Acad. 2^d, p. 259, (1751).

URTICA DIOICA Linn., Sp. Pl. p. 984, (1753).

No. 11443 Notre Dame, Ind.

Urtica gracilis Ait., Hort. Kew. 3 p. 34, 1 (1789).

Lake Maxinkuckee (H. W. Clarke); Millers (Umbach); No. 11684 Studebaker's Woods, South Bend, Common also in Laporte, Lake, Elkhart, Berrien, Van Buren and Porter Cos.

URTICASTRUM Moehring, Hort. Prov. (1736) also Fabricius, Enum. p. 204, (1759).

Laportea Gaudich., Freyc. Voy. Bot. j. 498, (1826).

Urticastrum divaricatum (Linn.) Kuntze, Rev. Gen. Pl. p. 635, (1891).

Urtica divaricata Linn., Sp. Pl. p. 985, (1753), *Urtica canadensis* Linn. l. c. *Laportea canadensis* (Linn.) Gaudich. l. c.

Lake Maxinkuckee (H. W. Clarke); Nos. 1801, 11477, Studebakers Woods, South Bend, also Hudson Lake, Laporte Co., St. Joseph, Mich., Van Buren Co., Porter Co., Elkhart Co.

ADICEA Raf. An. Nat. p. 129, (1815).

Adike Raf. N. Fl. p. 63, (1836).

Adicea Nieuwlandii Lunell, Am. Mid. Nat. p. 10, (1913).

Nos. 10236, 11739, Mineral Springs; 1802, 11719, 11592, 11610, 15007A, 15006A, 15005A, 15003A, 15004A, Studebaker's Woods, South Bend; 15002A, 15009A, 15010A, 11726, Notre Dame, Ind.

RAMIUM Rumphius, Herb. Amb. V. p. 214, (1747).

Boehmeria Jacq., Stirp. Am., p. 247, p. 157, (1763), *Duretia* Gaudich., Freyc. Voy. Bot. p. 500, adn (1826).

Ramium cylindricum (Linn.) Kuntze, Rev. Gen. II., p. 632, (1891).

Urtica cylindrica Linn., Sp. Pl. p. 984, (1753), *Boehmeria cylindrica* Sw., Prod. p. 34, (1788), *Urtica capitata* Linn., Spl Pl. p. 985, (1753).

HELXINE Dioscorides IV : 86, also Oribas., Matthioli, Lonicer, Lobelius, Caesalpinus, Brunfels, Cordus *Perdicium* Theophrastus (?) also Galen, 6 simpl. *Parietaria* Brunfels, 2, (1531) Turner, Cordus, Dodonaeus, Tabernaemontanus, Gesner, Tragus, C. Bauhin, *Muralis herba* Pliny and Celsus.

Parietaria Tour., Els. p. 409, (1694), I. R. H., p. 509, (1700) Linn. Syst. (1735), Gen. p. 317, (1737).

Parietaria Gen., p. 471, (1754).

Helxine pennsylvanica (Muhl.)

Parietaria pennsylvanica Muhlenberg, Willd. Sp. Pl. 4, p 155, (1806).

No. 15001a Notre Dame; Ind. Found in all the counties.

Order 21. SANTALALES.

Engler. Syllab. ed. I., p. 98, (1892).

Family 49. **SANTALACEAE** R. Br. Prodr. p. 350, (1870).

COMANDRA Nuttall, Gen. 1, p. 157, (1818).

Comandra umbellata (Linn.) Nutt., l. h.

Thesium umbellatum Linn., Sp. Pl. p. 208, (1753).

Nos. 2034, 3309 Notre Dame, (Dr. F. Powers). Lake Maxinkuckee (H. W. Clarke); Millers (A. Chase) [St. Joseph Co.] (Rothert); [Lake Co.] (Deam); [Laporte Co.] (Deam); Nos. 404, 9295 Notre Dame, Ind. No. 404 North of Notre Dame at Websters. Found in every county.

Order 22. ARISTOLOCHIEAE.

Bartling, Ord. Nat. Pl. p. 79, (1830).

Aristolochiales Engler, Syllab. 1, p. 100, (1892).

Family 50. **ASARINEAE** Dumortier An. Pl., p. 14, (1829). also Daubeny. Lect. Rom. Husb. p. 315, (1857), *Asaraceae*.

ASARUM Dioscorides I : 9. Pliny XXI : 6.

Asarum Brunfels, Tragus, Matthioli, Fuchs, Dodonaeus, Dalechamps, Lacuna, Cordus, Turner, Gesner, Lonicer, Castor Durante, Morrison, Thalius, Tabernaemontanus, Lobelius, Camerarius, Cuba, Hort. Sanit. (1491) also Marcellus Vergilius, Disc.

Com. p. 21, (1529) etc., etc., *Asarum* Tour., Els. p. 402, (1694), J. R. H., p. 501, (1700), Linn. Syst., (1735), Gen. p. 137, (1737). *ASARUM* Linn., Gen. p. 201, (1754).

Asarum canadense Cornuti., Pl. Canad., p. 24, (1635), also Linn., Sp. Pl. p. 442, (1753).

Nos. 432, 9364, 11174 Rum Village, S. of South Bend. 7789 Notre Dame (Tidestrom). Found by me also in Laporte, Berrien, Porter and Marshall Cos.

Family 51. **ARISTOLOCHIACEAE** Blume, Enum., Pl., Javan., 1, p. 81, (1850).

ARISTOLOCHIA Dioscorides, III : 4, Pliny XXV : 8.

Aristolochia Tragus, Lonicer, Camerarius, Matthioli, Dodonaeus, Anguillara, Cordus, Gesner, Turner, Lacuna, Lobellius, Castor Durante, Clusius, Caesalpinus, Fuchs, Rauwolf, Marcellus Vergilius, Cuba, Hort. Sanit. (1491) Ruellius, etc., etc. *Aristolochia* Tour., Els. p. 132, (1694). I. R. H., .. 162, (1700) Linn., Syst., (1735), Gen. Pl. p. 275, (1737). *ARISTOLOCHIA* Linn., Gen., p. 410, (1754). All the above incl. of *Pistolochia* Clusius, Dodonaeus, Gesner, Camerarius, Castor Durante, etc.

Aristolochia Serpentaria Linn., Sp. Pl., p. 96, (1753).

Nos. 11807a, 63, S. E. of Notre Dame, Ind., 2994, 2798, Notre Dame University grounds. Quite abundant.

Order 23. **FAGOPYRINAE.**

Bartling, Ord. Nat., p. 106, (1830).

Polygonales Engler, in Eng. and Prantl, Pflanzenf. Nachtr., p. 346, (1897).

Family 52. **POLYGONEAE** Jussieu. Gen. p. 22, (1787).

Polygonaceae Lindley, Nat. Syst. Ed. 2, p. 211, (1836).

Persicariaceae, Post and Kuntze, Lexicon p. 309, (1904).

RUMEX Vergil, Mov. 72. Pliny XIX : 12, 60.

Oxylapathum Dioscorides. *Acetosa* Cuba, Hortus Sanitatis, (1491). also Nevenara, ex : Brunfels Herb. Viv. Ic. II. p. 68, 117, also J. de Manliis, l. c. p. 168, (1531), *Acetosa* P. Miller, Abr. Gard. Dict. (1763), also Parkinson, Moench, Lonicer, Castor Durante, Columna, Camerarius, C. Bauhin. Prod., *Acetosa* Tour. Els. p. 403, (1694), I. R. H. p. 502, (1700);

* *Rumex Acetosella* Linn., Sp. Pl., p. 338, (1753).

Acetosa minor Castor Durante.

Acetosa repens St. Gray, Nat. Arr. 2, p. 276, (1821).

Acetosa tennifolia Moench, Meth. p. 357, (1794).

Acetosa Acetosella Miller. Gard. Diet., 8, Ev. (1768).

Lake Maxinkuckee (H. W. Clarke); [Lake Co.] (Hill); Millers, Ind. (Umbach); No. 2497 Notre Dame. Dr. F. Powers. Found in all the counties. Abundant.

LAPATHUM Theophrastus, I : 9, 7 : 2 Dioscorides II : 140.

Lapathos Columella X : 373.

Lapathum Gesner, Anguillara, Dodonaeus, Tragus, Ray, Lobelius, Camerarius, Lonicer, Castor Durante, Caesalpinus, Tabernaemontanus, Dalechamps, Clusius, etc., etc. *Lapathum* Tour., Els. p. 404, (1694), I. R. H. p. 504, (1700). *Rumex* Linn. Syst. (1735), Gen. p. 105, (1737). *RUMEX* Gen. p. 156, (1754). *Lapathum* Haller, Adanson, Scopoli, Lamarck, etc.

Lapathum verticillatum (Linn.).

Rumex verticillatus Linn., Sp. Pl., p. 334, (1753).

Nos. 2303, 2699, 11332, Notre Dame, Ind., 2742, Pine [St. Joseph Co.], Ind. Found in all the other countries.

Lapathum altissimum (Wood).

Rumex altissimus Wood, Classbook, p. 477, (1853).

Millers, Ind. (Umbach); Nos. 11290 Crumstown [St. Joseph Co.]; 9086 Notre Dame, Ind.

Lapathum brittanicum (Linn.).

Rumex brittanicus, Linn., Sp. Pl. p. 354, (1753), *Rumex*

Hydrolapathum var. *americana* A. Gray, Man. ed. 2 p. 377, (1856);

Rumex orbiculatus A. Gray, Man. ed. 5 p. 420, (1867).

Clarke, Ind. [Lake Co.] Umbach.

Lapathum crispum (Linn.) Scopoli, Fl. Car. ed. 2, p. 261, (1772)

Rumex crispus Linn., Sp. Pl., p. 335, (1753).

Found in Berrien, St. Joseph, Laporte, Marshall, Porter, Van Buren Co.

Lapathum mexicanum (Meisn.).

Rumex mexicanus Meisner, DC., Prod. 14, p. 45, (1856).

Rumex salicifolius Hooker, Fl. Bor. Am. 2, p. 129, (1840). not Weinm. (1821).

No. 9556 South Bend, Olivers.

FAGOPYRUM Lobelius, Obs. p. 513, (1576). Dodonaeus Pempt. 4 : 1 : 32, (1583), Stapelius, Theoph. Int. p. 929, (1644).

Tragopyrum Gerard. *Fagopyrum* Tour., Els., p. 411, (1694), I. R. H., p. 4511, (1700), *Helxine* Linn., Syst. (1735), Gen. p. 116, (1737), *Polygonum* Linn., Gen., p. 170, (1754). *FAGOPYRUM*

Hill. Br. Herb. p. 486, (1756) also Morandi (1761), Gaertner, (1791)

Fagopyrum vulgare Hill, l. c. (1756).

Fagopyrum esculentum Moench, Meth. p. 290, (1794).

Polygonum Fagopyrum Linn., Sp. Pl., p. 364, (1753).

Nos. 10335, 2521, Notre Dame, Ind.

PERSICARIA J. de Manliis ex Brunfels, Herb. Viv. Id. II., p. 173, (1531), Tragus, l. c. p. 161. Ruellius Nat. Stirp. p. 410, (1543). *Pulciaria* Brunfels l. c. p. 14, 15, 16, (1531). *Persicaria* Fuchs, Dodonaeus, Anguillara, Castor Durante, Matthioli, Tabernaemontanus, Ericius Cordus, Gesner, Lobelius, Caesalpinus, Lonicer, etc., etc. *Persicaria* Tour., Els. Bot. p. 410, (1694), I. R. H. p. 509, (1700); Linnaeus, Syst., (1735), Gen. Pl. p. 35, (1737).

PERSICARIA Trew. Herb. Blackw. t. 118, 119, (1754), Hill. Br. Herb. p. 486, (1756), Shaw. Trav. Obs. Lev. Collect. p. 466, (1757). Morandi, Hist. Pl. p. 118, (1761), Adanson, Fam. des Pl. II., p. 276, (1763). *Hydropiper* Fuchs, Anguillara, Dodonaeus, Matthioli, V. Cordus, Gesner, Caesalpinus.

Section POTAMOCALLIS Nwd., Am. Mid. Nat. II., p. 216, (1912).

Persicaria emersa (Michx.) Small., Fl. S. E. U. S. p. 376, (1903)

Persicaria coccinea (Muhl.) Greene, Leaflets I. p. 24, 36, (1904).

Polygonum amphibium var. *emersum* C. Rich in Michx. Flor. Bor. Am. I. p. 240, (1803).

For other synonyms as also for occurrences in our region of this and the following amphibious smartweeds see Am. Mid. Nat. II., p. 219, et. seg. (1912), p. 20, (1911).

Also Lake Maxinkuckee (H. W. Clarke).

Persicaria emersa var. **asprella**.

Persicaria coccinea var. *asprella* Greene. l. c. p. 36, Am. Mid. Nat. II., p. 221, (1912).

Persicaria pratincola Greene. Leaflets l. c. p. 36, Am. Mid. Nat. l. c. p. 223, also Millers, Ind. (Umbach).

Persicaria grandifolia Greene l. c. p. 37, 49, Am. Mid. Nat. l. c. p. 225, (1912), p. 20, (1911).

Persicaria tanaophylla Nwd. Am. Mid. Nat. l. c. p. 226,

Persicaria carictorum Nwd. Zm. Mid. Nat. l. c. p. 230.

The pond from which this type was collected is now being drained for the purpose of forming farm land. The aquatic phase will perhaps be extinct in this place next season. The terrestrial

phase, will, however, persist for a long time as in this form it is a weed hard to eradicate.

Persicaria mesochora Greene. l. c. p. 28. Am. Mid Nat. p. 234 l. c. p. 17, (1911). also Millers, Ind. (Umbach), Dune Park (A. Chase), both [Lake Co.].

Persicaria mesochora var. *arenicola* Nwd. l. c. p. 235.

Persicaria ammophila Greene. l. c. p. 471, Am. Mid. Nat. l. c. p. 236.

Persicaria fluitans (Eaton) Greene. l. c. p. 26, Am. Mid. Nat. l. c. p. 244, (1912), also p. 15, (1911).

Persicaria Hartwrightii (A. Gray) Greene l. c. p. 24, Am Mid. Nat. II., p. 15, (1911).

Section *Eupersicaria*.

Persicaria lapathifolia (Linn.) S. F. Gray, Nat. Au. II., p. 270, (1821).

Polygonum lapathifolium Linn., Sp. Pl. p. 360, (1753).

Polygonum incarnatum Ell., Bot. S. C. and Ga. 1, p. 456, (1817).

[Lake Co.] (Higdon and Raddin); Clarke, Ind. (Umbach); Lake Maxinkuckee (H. W. Clarke), [Lake Co.] (Deam); Nos. 2733A, Notre Dame, 369A, 9094, 9089, Webster's Station N. of Notre Dame. Found also in Van Buren, Berrien, Laporte, Porter, and Marshall Cos.

Persicaria pennsylvanica (Linn.) Small, Fl. S. E. U. S. p. 377, (1903).

Polygonum pennsylvanicum Linn., Sp. Pl. p. 362, (1753).

Lake Maxinkuckee (H. W. Clarke); [Lake Co.] (Deam); Nos. 1841, 10334, 9494, 9485. Notre Dame, Nos. 9419, 9488, Collected at Webster's Station, were affected by some smut-like parasitic fungus which caused the destruction of nearly all the inflorescences on the plants in the locality.

Persicaria persicarioides (H. B. K.) Small. l. c. p. 378.

Polygonum persicarioides H. B. K., Nov. Gen. 2, p. 179, (1817). Nos. 1825, 9409, Notre Dame, Ind.

Persicaria maculata Euricius Cordus, Botanologicon, (1551).

Also Thalius, Hercyna p. 85, (1588), also S. F. Gray Nat. Air, p. 270, (1821), *PERSICARIA MACULOSA* Trew, Herb. Blackw, t. 118, (1754), also Gesner, Ray, *Persicaria mitis* J. Bauhin, Lobelius (1576) Linn. Fl. Lapp. No. 71, Morandi, *Persicaria mitis* Linn.,

Am. Acad. II., p. 46, (1751), *Polygonum Persicaria* Linn., Sp. Pl. p. 361, (1753).

Lake Maxinkuckee (H. W. Clarke); Nos. 1825, 9409, Notre Dame, Ind. Found also in Berrien, Laporte, Marshall, Van Buren, Cass, and Porter Co.

Persicaria hydropiperoides (Michx.) Small. l. c. p. 378.

Polygonum hydropiperoides Michx., Fl. Bor. Am. 1, p. 239, (1803).

Polygonum mite Persoon, Syn. I, p. 440, (1805).

Millers (Umbach): Nos. 10258, 10218, 10257 Mineral Springs [Porter Co.], 773 Hudson Lake, 205, 10257A Webster's Station N. of Notre Dame, 2694 Rum Village, S. of South Bend. Found also in Berrien, Van Buren, Marshall, Elkhart and Lake Cos.

Persicaria urens Lobelius. Obs. p. 171, Ind. 16, (1576), also Ray, Meth. p. 68, (1682).

PERSICARIA HYDROPIPER (Linn.) Opiz, Seznam, p. 72, (1852).

Persicaria mordax Thalius Sylva, Hercyna, p. 85, (1588).

Polygonum Hydropiper Linn., Sp. Pl. p. 361, (1753). *Persicaria urens* Linn. and Hesselgren, Pan Suecus, Am. Acad. II., p. 246 (1851).

Lake Maxinkuckee (H. W. Clarke); Millers (Umbach); Nos. K35 Hudson Lake, 9480 Notre Dame. Found also in Marshall, Porter, Van Buren, Cass, Berrien, Lake Cos.

Persicaria punctata (Ell.) Small, l. c. p. 379.

Polygonum punctatum Ell., Bot. S. C. and Ga. I, p. 435, (1817);

Polygonum acre H. B. K., Nov. Gen. 2, p. 179, (1817). Not Lam.

Lake Maxinkuckee (H. W. Clarke); Dune Park (A. Chase). [Lake Co.] (Deam).

Persicaria punctata var. **leptostachya** (Meisn.) Small. l. c. p. 379.

Polygonum punctatum var. *leptostachyum* (Meisner) Small, Bull Torr. Bot. Club. 19, p. 356, (1892). *Polygonum acre* var. *leptostachyum* Meisner, DC. Prod. 14, p. 108, (1856).

No. 9408 Notre Dame, 10216 Mineral Springs.

Persicaria tomentosa (Schränk) Bicknell.

Polygonum tomentosum Schrank, Baier, Fl. 1, p. 669, (1789).

No. 2733 S. S. S. R. R. 4 miles from Galien, Mich, in St. Joseph Co., Ind.

Section (Old Genus) HEPTARINIA Raf., Fl. Tell. III., p. 12, 16, 94, 95, (1836); also New Fl. Am. IV., p. 48, (1836).

Persicaria orientalis (Linn.), Spach, Hist. Nat. Veg. 10, p. 535 (1841).

Polygonum orientale Linn., Sp. Pl., p. 362, (1753).

No. 11502 Notre Dame escaped from cultivation.

POLYGONUM Dioscorides, IV : 4, Pliny, XXVII : 12.

Polygonum E. Cordus, Tragus, Lacuna, Anguillara, V. Cordus, Ruellius, M. Vergilius, Herniolaus Barbarus Gesner, Caesalpinus, Thalius, Camerarius, Castor Durante, Lobelius, Lonicer, Tabernaemontanus, Dalechamps, Dodonaeus, Cusius, Matthioli, etc., etc. *Polygonum* Tour. Els., p. 411, (1694), I. R. H. p. 511, (1700), *Polygonum* Linn., Syst. (1735) and Gen. p. 116, (1737), in a limited sense. *Polygonum* Linn., p. 170, (1754) in part.

Polygonum vulgare Camerarius, Hort. Med. p. 129, 130, (1588).

Polygonum latifolium C. Bauhin Pinax p. 281, (1623). *POLYGONUM AVICULARE* Linn., Sp. Pl. p. 362, (1753). *Polygonum latifolium* Tour., Els. p. 411, (1694), I. R. H. p. 510 (1700). *Polygonum mas* Matthioli, Fuchs, Dodonaeus, Anguillara, Cordus, *Polygonum masculum* Tragus, Lacuna, *Polygonum primum* Turner. *Polygonum majus* Lonicer, Tabernaemontanus. *Polygonum vulgare* Linn., and Hesselgren. l. c. p. 246, (1751)

Lake Maxinkuckee (H. W. Clarke); No. 9187 Granger, Ind. [St. Joseph Co.]; Found also in Elkhart, Berrien, Van Buren, Laporte, Marshall, Porter and State Cos.

Polygonum erectum (Linn.) Sp. Pl. p. 363, (1753).

Lake Maxinkuckee (H. W. Clarke). No. 11483 Studebaker's Woods, South of South Bend. Also Laporte and Berrien Cos.

Polygonum tenue Michx. Fl. Bor. Am. 1 p. 237, (1803).

[Lake Co.] (Hill, Deam); [Porter Co.] (Cowles); Lake Maxinkuckee, (H. W. Clarke); Clarke, Ind. (Umbach).

PLEUROPTERUS Turcz. Bull. Soc. Nat. Moscow, 21, p. 87, (1848).

Pleuropterus Zuccarinii Small, Mem. Dept. Bot. Col. Coll. 1. p. 158, pl. 66, (1895).

Polygonum cuspidatum Sieb. and Zucc. Fl. Jap. 2, p. 84, (1846) not Willd. (1825).

Nos. 10350, 10350A. Waste ground, Notre Dame. Spreading from specimens once probably cultivated nearby.

TOVARA Adans., Fam. Pl. 2, p. 276, (1763).

Tovara virginiana (Linn.) Raf., Fl. Tell. 3, p. 12, (1836).

Polygonum virginianum Linn., Sp. Pl. p. 360, (1753).

Lake Maxinkuckee (H. W. Clarke); No. 804 South Bend, Ind. Found abundantly in all the countries.

BILDERDYKIA Dumortier. Fl. Belg. Stam. p. 18, (1827).

Tiniaria Webb. and Moq.; Webb and Berth. Hist. Nat. Canar. 3, p. 221, (1836-40).

Bilderdyckia Convolvulus (Linn.) Dum. l. c. (1827).

Polygonum Convolvulus Linn., Sp. Pl. p. 364, (1753); *Tiniaria Convolvulus* Webb. and Moq. l. c. (1836); *Orobanche Ruellii* Gesner, *Helxine cissampelos* Dodonaeus, *Centunculus Plinii* Anguillara *Volubilis nigra* Tabernaemontanus, Gesner, *Polygonum hederaceum* Columna.

Lake Maxinkuckee (H. W. Clarke); Pine, Ind. [Lake Co.] (Umbach). Found by me in St. Joseph and Berrien Cos.

Bilderdykia dumetorum (Linn.), Dum. l. c. (1829).

Polygonum dumetorum Linn., Sp. Pl. 2nd Ed. p. 522, (1762); *Tiniaria dumetorum* Opiz, Segnam, p. 98, (1852).

Nos. 9431, 2520, 11354, 11444, Notre Dame, Ind.

Bilderdykia cilinodis (Michx.) Greene, Leaflets., p. 23, (1904).

Tiniaria cilinodis (Michx.) Small, Fl. S. E. U. S. p. 382, (1903). *Polygonum cilinode* Michx., Fl. Bor. Am. 1 p. 241, (1803).

South Haven [Van Buren Co.] (L. H. Bailey).

TRACAULON Raf., Fl. Tell. 3, p. 13, (1836).

Echinocaulos (Meisn.) Hassk., Fl. XXV., 2, Beibl. p. 20, (1842).

Tracaulon sagittatum (Linn.), Small. l. c. p. 381, (1903).

Polygonum sagittatum Linn., Sp. Pl. p. 363, (1753)

Lake Maxinkuckee (H. W. Clarke); Dune Park (A. Chase); Clarke, Ind. (Umbach); Nos. 9384, 2249, 1824, Notre Dame, Ind. 745 Sagunay [Laporte Co.].

Tracaulon arifolium (Linn.) Raf. l. c.

Polygonum arifolium Linn., Sp. Pl. p. 364, (1753).

Mineral Springs (Deam) South Haven (Bailey); Nos. 757 Sagunay, Ind., 9153 South Bend, Ind. 206, 708 Tamarack, [Laporte Co.]; No. 708 seems to be intermediate between *T. arifolium* and *T. sagittatum*

PSAMMOGONUM Nwd., Am. Mid. Nat. III. p. 171, (1914).

Gonopyrum Fisch., and Mey ex C. A. Meg. Mem. Acad. St. Petersb. Ser. VI., VI., p. 144, (1840), not *Gonopyros* Raf., Med. Fl. I., p. 155, (1828). **Polygonella** Michx. Fl. Bor. Am. 2, p. 240, (1803), segregate.

Psamnogonum articulatum (Linn.), Nwd., l. c.

Polygonello articulata (Linn.) Meisner, Gen. 2 p. 228, (1836-43)
Gonopyrum articulatum (Linn.) F. and M.

[Lake Co.] (Hill); Tolleston [Lake Co.] (Hill); Millers (Umbach)
(Bastin); [Porter Co.] (Cowles); Dune Park (A. Chase); No. 10233,
10264, 10264A, 720, Mineral Springs, 720A Tamarack [Laporte Co].

Department of Botany,
University of Notre Dame, Ind.

OUR BIRDS IN THE AUTUMN OF 1912.

BY BROTHER ALPHONSUS, C. S. C.

August the 21st is the date from which the records for the season start. The Killdeer was absent 8 days after the 23rd. This species in August, flies about in small flock—probably families—and may occur in certain locality only occasionally. In September there were 10 records of this species; in October, 12; in November none. What was said of the Killdeer in August is substantially true of the species during the rest of its stay in autumn.

The Kingfisher was recorded 3 times in August, 5 times in September, 3 times in October and not once in November. These records indicate that this species is uncommon after August 29th. During autumn the Kingfisher must move from one place to another until it finally disappears altogether.

Records of the House Wren become rare after August 15th. In August there were 4; in September 1; in October 1. The scarcity of observations is due to the fact that the species usually stays in brush heaps or wood piles in autumn, and unless such places are visited in numbers, the observer may fail to find the Wren.

Like the Wren, the Catbird and Brown Thrasher are partial to certain places in autumn. They stay in thickets which border roadsides, and are very quiet, seldom uttering even a call-note. Sometimes they may be seen in the road feeding. In August there were 2 records for the Catbird; in September, 8. The Brown Thrasher was observed twice in August and the same in September.

For the Flicker in August there were 3 records; in September,

10; in October, 1. After the 10th of September, there were but 3 records, very widely apart. A probable explanation of the great difference between these three records is the following. Before the 10th of September most of this species that were resident here during summer migrated south, while those seen after this date were birds from farther north.

In September the Yellow-billed Cuckoo was recorded 5 times, the greatest difference between any two of the dates being 13 days. No doubt the species was abundant in our locality until the date of its departure on Sept. 25.; and should, therefore, have been seen often during the first half of the month. No satisfactory explanation offers itself for such a long period of absence.

The Bluebird shows no records for August, 3 for September, none for October, 1 for November. In autumn this species is known to gather in considerable flocks, which feed in favorable localities. Should the observer not visit such a place, he may not see a single individual of the species for many weeks. There were 48 days between the last two dates on which the writer saw the Bluebird this autumn.

In the Meadowlark we have a species that disappears in late summer for more than a month. This year the time of migration was from August 2 to Sept. 19—48 days. After its reappearance, the species may be found regularly until its final migration.

After August 16th, the Vesper Sparrow was recorded but once—Sept. 29th. It is difficult to record this species when the song season is over. Being a bird that resorts to outlying fields and pastures, the observer has to go out of his usual way to find the species. I was fortunate to make this one accidental record, for otherwise I should have missed the date of migration by a big margin.

The Mourning Dove was regularly seen in August and in September until the 8th. After this date there were two irregular records for September and none during the rest of the season. In other years I have made fortunate records of this species in October, which, I think, is the month when the Dove finally departs. As the species is not abundant, the observer must find it difficult to record toward the end of its stay in the north.

The Phoebe was recorded 3 times in September and October. These dates are late in September and early in October. Like the Meadowlark this species migrates in summer. This year the

bird disappeared on July 31 and was absent until Sept. 25—56 days. When the last brood is fledged, the families wander about in field and grove, and thus may be wholly absent from certain localities until they begin to pass south in force.

A number of species were recorded but a few times, indicating that they were migrants passing rapidly to the south. Such were: Crested Flycatcher, Purple Martin, Baltimore Oriole, Chipping Sparrow in September; Sapsucker, Yellow Palm Warbler, Hermit Thrush in October; Bluebird, Bronzed Grackle, Canada Goose, Northern Shrike in November; Song and Tree Sparrows, Yellow Rail in December.

AUGUST.

Crow, 21, 23, 25, 29, 31.	Catbird, 23, 24.
Blue Jay, 21 to 31.	Kingfisher, 21.
Robin, 21, 22, 23, 25 to 28, 30.	Red-headed Woodpecker, 21 to 31.
Song Sparrow, 21 to 31.	Brown Thrasher, 21, 26.
Bronzed Grackle, 21 to 31.	Downy Woodpecker, 21, 25, 27, 29, 30, 31.
Killdeer, 21, 22, 23.	White-breasted Nuthatch, 21, 26, 30, 31.
Field Sparrow, 23, 24, 26, 30, 31.	Goldfinch, 21 to 31.
Mourning Dove, 21, 23, 24, 27, 30.	Flicker, 23, 27, 29.
Screech Owl, 25.	Wood Pewee, 21 to 31.
Kingfisher, 21, 22, 23.	Yellowlegs, 21, 24, 29.
House Wren, 21, 26, 28.	Bobwhite, 25.
Chimney Swift, 21, 23 to 30.	Yellow-billed Cuckoo, 29, 31.
Warbling Vireo, 21, 23 to 27, 29, 30, 31.	Wilson Warbler, 30.
Baltimore Oriole, 21, 24, 25, 27, 31.	Cedarbird, 29, 30.
Indigo Bird, 21, 23, 24, 25, 30, 31.	

Total number of species seen, 29.

SEPTEMBER.

Crow, 7, 8, 11 to 15, 18, 23, 27, 28, 29.	Song Sparrow, 1 to 6, 8, 12, 13, 17, 21 to 30.
Blue Jay, 1 to 16, 18 to 25, 27, 28, 29.	Meadowlark, 19, 22, 26, 27, 28, 29.
Robin, 1, 3, 4 to 11, 13, 14, 19, 20, 22, 23, 24, 28, 29.	Bronzed Grackle, 1, 2, 4 to 11, 13 to 16, 18, 20, 22, 25 to 28.
Bluebird, 12, 18, 20.	Killdeer, 3, 5, 6, 21 to 25, 27.

Vesper Sparrow, 29.
 Mourning Dove, 1, 2, 4, 6, 8,
 17, 22.
 Cowbird, 6, 10, 15, 18, 20, 22,
 25, 26, 27, 29, 30.
 Screech Owl, 5, 28.
 Kingfisher, 5, 12, 14, 21, 23.
 House Wren, 17.
 Chimney Swift, 1 to 6, 8 to 12,
 15, 18, 19, 20, 22, 24, 25, 28.
 Warbling Vireo, 1, 3, 4 to 10, 12.
 Baltimore Oriole, 2, 4.
 Indigo Bird, 1 to 8, 21.
 Catbird, 4 to 8, 13, 14, 17.
 Purple Martin, 3, 4.
 Red-headed Woodpecker, 1, 2,
 4, 5, 8.
 Brown Thrasher, 11, 12.
 Whip-poor-will, 19.
 Chipping Sparrow, 1, 3.
 Downy Woodpecker, 4, 5, 14,
 17, 26, 28, 29.

Total number of species seen, 41.

White-breasted Nuthatch, 1, 2,
 5, 6, 9, 14, 15, 16, 21, 24, 28.
 Goldfinch, 1, 2, 4 to 7, 9, 14, 16,
 21, 22, 23, 25, 27 to 30.
 Flicker, 1, 3, 4 to 8, 10, 14, 27.
 Phoebe, 25, 29, 30.
 Wood Pewee, 1 to 4, 8, 9, 13,
 16, 17.
 Yellowlegs, 5.
 Yellow-billed Cuckoo, 1, 14, 16,
 21, 24.
 Crested Flycatcher, 2.
 Red-breasted Nuthatch, 4.
 Herring Gull, 11.
 Black-throated Green Warbler,
 16, 21, 23.
 Redstart, 19.
 Myrtle Warbler, 30.
 White-throated Sparrow, 26, 27,
 29.
 Golden-crowned Kinglet, 28.
 Snowbird, 28, 29.

OCTOBER.

Crow, 1, 7, 10, 12, 15, 16, 19, 21,
 22, 23, 25, 26, 28, 30, 31.
 Blue Jay, 1 to 13, 15 to 19, 21,
 22, 24, 25, 26, 28 to 31.
 Bluebird, 1, 14, 16.
 Song Sparrow, 1 to 5, 7, 8, 10,
 11, 14 to 17, 20, 21, 24, 26,
 28, 31.
 Robin, 1, 2, 3, 5, 8, 10, 11, 13,
 14, 17, 20, 21, 24, 26.
 Meadowlark, 2, 5, 6, 7, 14.
 Bronzed Grackle, 1 to 6, 8 to 16,
 18 to 21.
 Towhee, 15, 16, 23.
 Field Sparrow, 2, 3, 9, 10, 15.

Cowbird, 1, 2, 3, 10.
 Screech Owl, 19.
 Kingfisher, 1, 8, 26.
 House Wren, 7.
 Downy Woodpecker, 1, 2, 5, 6,
 7, 12, 16, 17, 25, 27 to 31.
 White-breasted Nuthatch, 1, 5
 to 14, 16, 21, 22, 23, 26 to 30.
 Goldfinch, 1, 2, 7, 11, 12 to 16,
 18, 21, 23, 26, 28, 30.
 Flicker, 14.
 Phoebe, 1, 2, 3.
 Chickadee, 15.
 Myrtle Warbler, 1, 2, 4, 7, 15,
 16, 20.

- | | |
|------------------------------------|----------------------------|
| Golden-crowned Kinglet, 1, 5, | Cardinal, 11. |
| 6, 9, 12, 13, 15, 16, 19, 21. | Hell Diver, 9, 15. |
| Snowbird, 1, 2, 5 to 8, 10, 12 | Yellow Palm Warbler, 11. |
| to 31. | Hermit Thrush, 12. |
| Brown Creeper, 1, 15, 18, 21. | Sparrow Hawk, 18. |
| Sapsucker, 2. | Canada Geese, 23. |
| White-throated Sparrow, 2 to 5, | Yellowlegs, 24. |
| 7, 8, 9, 11, 12, 14 to 20, 22, 24. | Tree Sparrow, 25, 28, 30. |
| Killdeer, 5, 8 to 11, 17, 18, 20. | Red-breasted Nuthatch, 25. |
| Red-winged Blackbird, 2, 31. | |

Total number of species seen, 36.

NOVEMBER.

- | | |
|---------------------------------------|----------------------------------|
| Blue Jay, 1, 3, 4, 6 to 12, 14, | Tree Sparrow, 1, 2, 5, 7, 8, 11, |
| 15, 16, 18 to 21, 25 to 30. | 12, 13, 15, 17 to 22, 25. |
| Crow, 3, 4, 7, 9, 10, 13, 14, 15, | Golden-crowned Kinglet, 2, 3, |
| 18, 22, 23, 25, 27, 28, 30. | 4, 7. |
| Song Sparrow, 2, 7, 12, 20, 25. | Bronzed Grackle, 7. |
| Bluebird, 7. | Screech Owl, 9, 17. |
| Downy Woodpecker, 3, 4, 7 to | Brown Creeper, 11 to 15, 18 to |
| 12, 14, 15, 17 to 22, 25, 28, 30. | 22, 24. |
| White-breasted Nuthatch, 2, 3, | Cardinal, 12. |
| 4, 5, 7, 9, 11 to 16, 19 to 23, 25. | Canada Geese, 17. |
| Goldfinch, 3, 4, 7, 8, 9, 15, 16, 18. | Hairy Woodpecker, 21. |
| Chickadee, 7, 9, 11 to 17, 25, 29. | Northern Shrike, 25. |
| Snowbird, 1 to 7, 9 to 23, 25, | Herring Gull, 30. |
| 27, 29. | |

Total number of species seen, 19.

DECEMBER.

- | | |
|--------------------------|--------------------------------|
| Blue Jay, 1, 3, 4. | Downy Woodpecker, 4. |
| Chickadee, 1, 2, 4. | White-breasted Nuthatch, 4, 5. |
| Snowbird, 1, 2, 3, 4, 5. | Tree Sparrow, 2, 5. |
| Crow, 3, 4. | Brown Creeper, 1, 3. |
| Song Sparrow, 5. | Yellow Rail, 3. |

Total number of species seen, 10.

Total number of species in autumn, 58.

OUR BIRDS IN THE SUMMER OF 1913.

BY BROTHER ALPHONSUS, C. S. C.

In June 1912 there was only one record of the Bluebird against 7 records in the same month in 1913. In July 1912, 12 records were obtained; for this month, in 1913, the number of records was 28. For August, 1912 showed 4 records and 1913, 20 records. As the totals for the three months in each year, 1912, had 17 records and 1913, 55, or more than three times as many records for 1913. In both years the species was most plentiful in July, after the first brood was reared. The great disparity between the records of the two years seems incredible in such a common species, and the writer does not know what can have been the cause of this great difference.

The Meadowlark was recorded in June, 1912, 22 times; in June, 1913, 24 times; in July, 1912, 12 times; in July, 1913, 3 times; in August, 1912, once; in August, 1913, not once. In July, 1912, the writer was staying in St. Joseph Co., until the 17th inst.; he then went to Van Buren Co., Mich., where no records were obtained except one, on Aug. 1. The character of the country where the writer was living in the latter place was hilly and, therefore, not favorable for finding the Meadowlark.

A comparison of the summer months in 1912 and 1913 shows, for the Killdeer, 3 records for June, 1912, and 6 for June, 1913, 8 records for July, 1912, and 2 for July, 1913; one record for Aug., 1912 and 10 for Aug. 1913. Although the writer was living both years in places where water was adjacent, the Killdeer was seldom found. In other summers the species was abundant, especially in July. Perhaps changed conditions on the shores of the lakes in the latter seasons were not favorable for feeding.

The records of the Towhee for June, 1912, were one; for June, 1913, 2; for July, 1912, 6; for July, 1913, one; for August, 1912, 3; for August, 1913, none. Total records for 1912—10; for 1913—3. These records show that this species is very rare in places in two counties of different states.

The few records of the Nighthawk—9 in 1912 and 1 in 1913—show that this species may not be observed at all or very rarely in the summer months out in the country. The three records for July, 1912 were obtained while the writer was visiting the neighbor-

ing city of South Bend, where on cloudy afternoons he saw Night-hawks flying above the buildings. No doubt the species may be seen frequently in any city.

The total records of the Hummingbird for two summers were 9, showing that this species may be placed among those that are very rare. Probably the observer who would frequently visit flower beds would make more records than one who made no special effort to do so. But the average person, and even the careful observer, may not see a Hummingbird except on rare occasions, covering a long period of time.

Like the Nighthawk, the Purple Martin is a species that is an inhabitant mostly of towns and is rarely seen in the country. The records of two summers show 14 for 1912 and 7 for 1913. This species can easily be attracted in the country if there are suitable nesting places for it. Both the song and habits of the Martin are very pleasing to all bird-lovers.

Species that were not seen in June, 1913 were: Yellow Warbler, Redstart, Scarlet Tanager, Bittern, Wood Thrush, Cardinal, Red-shouldered and Sparrow Hawks, Marsh Wrens, Chickadee. Most of these species are locally distributed—in deep woods or their vicinity, and may not be observed elsewhere in June. The Redstart was not found in July either, reappearing on Aug. 29.

The only record of the Blue Jay after July 27, 1913, when the writer left St. Joseph Co., Ind. for Van Buren Co., Mich.—where he stayed until Aug. 23—was on Aug. 11. Even this record would not have been made if he had not taken a long walk some six miles away from Bankson Lake, his summer resort. Other summers this species was present in the oak grove near the lake.

The absence of the Maryland Yellowthroat in the vicinity of Bankson Lake, from July 4 until the writer left the Lake (Aug. 23), was remarkable. In other summers the note of this species was common in marshy places. A very dry season, in 1913, may have had something to do with the scarcity of the Maryland Yellowthroat.

Among some rare species seen this summer were: Acadian Flycatcher, Veery, Cardinal, Grasshopper Sparrow, Dickcissel, Sandhill Crane and Ovenbird. The only record of the Acadian Flycatcher that the writer has ever made was on July 13. The bird was found in deep woods not far from Bankson Lake. The Veery was still in song on July 25, when the bird was found at

the edge of the same woods. Grasshopper Sparrows were also observed for the first time—locally in hilly fields. The only records of the Dickcissel this year were those made in June and July—none last year. The Sandhill Crane was observed for the last two summers—more frequently in 1913. The Ovenbird has been seen but twice by the writer in nine years.

JUNE.

- | | |
|--|--|
| Crow, 1, 4, 7, 10, 12, 13, 17, 18, 23, 27 to 30. | Orchard Oriole, 1 to 5, 7 to 26, 28, 29, 30. |
| Blue Jay, 1 to 5, 8, 10, 12, 13, 17 to 25. | Kingbird, 2, 3, 4, 6, 7, 9 to 13, 17, 18, 20, 25, 27 to 30. |
| Robin, 1 to 30. | Alder Flycatcher, 2 to 6, 18. |
| Bluebird, 3, 9, 11, 13, 23, 27, 29. | Crested Flycatcher, 1 to 7, 10, 11, 13, 14, 16, 18, 21. |
| Song Sparrow, 1 to 30. | Cedarbird, 1, 2, 4, 5, 6, 8, 9, 11, 12, 15, 17, 19 to 22, 26, 27, 28. |
| Meadowlark, 1 to 9, 11, 12, 13, 15 to 18, 20 to 24, 26, 27, 29. | Yellow-billed Cuckoo, 1 to 4, 6 to 12, 16, 22, 24, 27, 28. |
| Bronzed Grackle, 1 to 27, 29. | Black-billed Cuckoo, 1. |
| Killdeer, 1, 9, 20, 22, 23, 27. | Red-headed Woodpecker, 1 to 13, 16 to 23, 25 to 30. |
| Towhee, 1, 21. | Spotted Sandpiper, 1, 2, 4, 6, 7, 8, 10, 11, 12, 17, 20, 24, 25. |
| Field Sparrow, 1, 2, 4, 5, 6, 8, 10, 11 to 14, 16, 17, 20 to 25, 28, 30. | Brown Thrasher, 1 to 4, 6 to 13, 16, 17, 18, 20 to 23, 25, 30. |
| Vesper Sparrow, 1 to 7, 9 to 13, 16, 17, 20 to 24, 27 to 30. | Chipping Sparrow, 1, 2, 4, 5, 6, 7, 9 to 13, 15, 17, 18, 20 to 23, 26, 27 to 30. |
| Red-winged Blackbird, 1 to 10, 14, 16, 17, 18, 20, 23, 27 to 30. | Goldfinch, 1 to 5, 7 to 13, 16, 17, 18, 19 to 25, 28. |
| Mourning Dove, 1 to 7, 9 to 13, 18, 21, 22, 23, 27, 28, 29. | Flicker, 1 to 13, 16, 17, 18, 20 to 30. |
| Cowbird, 1 to 7, 9 to 25, 27. | Red-eyed Vireo, 1, 2. |
| Kingfisher, 1, 11, 12, 21, 27 to 30. | Phoebe, 1, 5, 6, 8, 20, 27 to 30. |
| House Wren, 1 to 12, 14, 15, 17 to 23, 25, 26. | Barn Swallow, 3, 4, 6, 22, 27, 28, 29. |
| Chimney Swift, 1 to 13, 15 to 18, 21, 22, 23, 26, 29. | Downy Woodpecker, 10, 14, 20, 23, 24, 25, 27 to 30. |
| Warbling Vireo, 1 to 30. | Loggerhead Shrike, 1, 9. |
| Baltimore Oriole, 1 to 30. | |
| Indigo Bird, 1 to 11, 14 to 18, 21, 23 to 30. | |
| Catbird, 1 to 27. | |

Maryland Yellowthroat, 3, 4, 14, 18, 20, 21, 23.	Loon, 30.
Carolina Wren, 1, 6, 11, 20.	Bittern, 30.
Purple Martin, 1.	Wood Pewee, 1 to 30.
Bobwhite, 7.	Screech Owl, 27.
White-breasted Nuthatch, 19, 20, 23, 27 to 30.	Bobolink, 27.
Dickcissell, 28, 30.	Yellow-throated Vireo, 18, 27, 28
	Whip-poor-Will, 28, 29.
	Nighthawk, 7.

Total number of species seen, 53.

JULY.

Crow, 1 to 13, 15 to 31.	Orchard Oriole, 1, 2, 8, 10, 11, 15, 20, 21, 22,
Robin, 1 to 31.	White-breasted Nuthatch, 1 to 12, 14 to 31.
Bluebird, 1 to 11, 13 to 23, 25, 26, 28 to 31.	Scarlet Tanager, 2, 3, 13, 15, 17, 18, 22, 23.
Song Sparrow, 1 to 31.	Alder Flycatcher, 7, 10, 11, 18, 20.
Meadowlark, 5, 7, 15.	Crested Flycatcher, 7, 8, 25.
Bronzed Grackle, 2, 3, 7, 10, 13.	Cedarbird, 1, 3, 4, 5, 7, 11, 13, 16, 17, 20, 23, 24.
Killdeer, 28, 29.	Yellow-billed Cuckoo, 1 to 5, 7, 13, 17, 18, 21, 23.
Towhee, 6.	Whip-poor-will, 1, 5, 7, 14, 20, 22, 28.
Field Sparrow, 1 to 4, 6, 7, 9 to 11, 13 to 26, 28, 30, 31.	Red-headed Woodpecker, 1 to 31
Vesper Sparrow, 1 to 8, 10, 11, 13 to 22, 29, 30.	Spotted Sandpiper, 3, 4, 11, 12, 13, 17, 19, 20, 21, 23, 27 to 31.
Red-winged Blackbird, 1 to 23, 25, 28, 30.	Brown Thrasher, 15, 18.
Mourning Dove, 15, 19, 21, 25, 28, 29.	Chipping Sparrow, 1 to 31.
Kingfisher, 1 to 6, 8, 9, 10, 12, 13, 15 to 19, 21, 23 to 26, 28, 29.	Goldfinch, 1, 6 to 12, 18, 19, 21 to 31.
House Wren, 15.	Flicker, 1 to 24, 27, 29, 30.
Chimney Swift, 8, 21.	Yellow-throated Vireo, 3, 7, 23.
Yellow Warbler, 4, 6, 7, 15, 16, 18, 25, 27, 28, 31.	Red-eyed Vireo, 13, 15, 18, 22, 23, 25, 31.
Warbling Vireo, 1 to 31.	Phoebe, 1 to 17, 21, 22, 26 to 29.
Baltimore Oriole, 1 to 6, 8, 9, 15, 17, 18, 20, 21 to 29, 31.	Bobolink, 15.
Catbird, 1, 2, 4, 5, 6, 7, 10, 11, 13, 15, 16, 18, 20 to 25, 27, 28.	Downy Woodpecker, 2, 5, 7, 9, 10, 12, 15, 17, 21, 22, 23, 25, 28.
Kingbird, 1 to 31.	

Barn Swallow, 1 to 31.
 Maryland Yellowthroat, 2, 3, 4.
 Loon, 5, 21, 23, 24.
 Dickcissel, 1, 2, 3.
 Tree Swallow, 1, 2, 3, 6, 7, 8, 27.
 Greater Yellowlegs, 1, 3, 18, 21,
 23, 24, 26, 29, 30, 31.
 Purple Martin, 2, 3, 4, 5, 7, 8,
 9, 15, 18, 21, 23.
 Chickadee, 3, 6, 7, 13, 16, 18,
 21, 22, 30.
 Hairy Woodpecker, 4, 5.
 Grasshopper Sparrow, 5, 6, 7.

Bobwhite, 7, 15, 18.
 Acadian Flycatcher, 13.
 Blue Gray Gnatcatcher, 13, 18.
 Hell Diver, 21, 23, 24.
 Cardinal, 22.
 Veery, 25.
 Screech Owl, 27.
 Red-shouldered Hawk, 27.
 Sandhill Crane, 2, 3, 8, 19, 23,
 27, 31.
 Indigo Bird, 3, 7, 10, 11, 13, 15
 to 18, 20 to 25, 27, 28.
 Cowbird, 3, 12, 15.

Total number of species seen, 60.

AUGUST.

Crow, 1 to 23, 25, 28, 31.
 Blue Jay, 11, 24 to 31.
 Robin, 1 to 21, 24 to 31.
 Bluebird, 1 to 4, 6 to 15, 18 to
 20, 22, 28, 31.
 Song Sparrow, 1 to 31.
 Bronzed Grackle, 9, 24 to 31.
 Killdeer, 4, 11, 12, 13, 21, 23,
 26, 27, 30, 31.
 Towhee, 11.
 Field Sparrow, 1 to 7, 10 to 13,
 15, 18, 19, 20, 22, 23, 25, 28,
 29, 31.
 Vesper Sparrow, 4, 5, 9, 10, 12.
 Red-winged Blackbird, 4, 11,
 16, 22.
 Mourning Dove, 24 to 30.
 Cowbird, 26 to 30.
 Kingfisher, 1, 4, 6, 8, 12, 13, 15,
 17, 18, 22, 25.
 House Wren, 24, 25, 29.
 Chimney Swift, 25 to 31.
 Yellow Warbler, 2.
 Warbling Vireo, 1 to 31.

Baltimore Oriole, 2 to 28, 31.
 Indigo Bird, 1 to 9, 13, 15, 19,
 23, 28.
 Catbird, 3, 7, 9, 11, 13, 19, 21
 to 25, 27, 28, 31.
 Kingbird, 2 to 21, 23, 25 to 30.
 White-breasted Nuthatch, 1 to
 9, 11 to 17, 19 to 21, 23, 25,
 27, 30, 31.
 Scarlet Tanager, 7, 23.
 Alder Flycatcher, 13.
 Crested Flycatcher, 27, 29.
 Cedarbird, 3, 4, 7, 13, 15, 20,
 21, 28 to 31.
 Yellow-billed Cuckoo, 5, 7, 8,
 10, 12 to 16, 19 to 21, 24,
 25, 27, 28, 29.
 Whip-poor-will, 14.
 Red-headed Woodpecker, 1 to 4.
 Spotted Sandpiper, 1, 2, 4, 6, 7,
 8, 12 to 15, 18 to 23.
 Brown Thrasher, 25 to 31.
 Chipping Sparrow, 1 to 5, 7, 8,
 9, 11 to 31.

- 6, to 13, 15 to 19, 21 to 31.
 Goldfinch, 1 to 31.
 Flicker, 1 to 5, 10, 16, 18, 19,
 20, 22, 24 to 31.
 Red-eyed Vireo, 1, 17, 23.
 Phoebe, 2, 5, 8, 14, 15, 23.
 Barn Swallow, 1 to 9, 11, 12, 15,
 17, 18, 20 to 23, 27, 30.
 Downy Woodpecker, 2, 4, 7, 11,
 12, 13, 17, 19, 21, 22, 23, 25,
 28, 30.
 Loon, 4, 15.
 Greater Yellowlegs, 1 to 4, 6 to
 10, 12, 13, 16, 17, 19, 20, 22, 30.
 Purple Martin, 3, 7, 8, 9, 12, 24.
 Chickadee, 3, 6, 7, 9, 13, 14,
 15, 18, 20.
 Grasshopper Sparrow, 1, 3, 4.
 Blue Gray Gnatcatcher, 15, 17,
 18 to 22.
- Hell Diver, 6, 7.
 Screech Owl, 14, 27, 28.
 Red-shouldered Hawk, 2, 9, 12,
 15, 16, 18, 20, 21.
 Wood Pewee, 1 to 31.
 Hummingbird, 7, 21, 27.
 Sandhill Crane, 1, 9, 11, 14,
 19, 21.
 Least Flycatcher, 25, 29.
 Lesser Yellowlegs, 26.
 Sparrow Hawk, 26.
 Long-billed Marsh Wren, 27.
 Ovenbird, 28.
 Redstart, 29, 30.
 Black and White Warbler, 29.
 Black-throated Green Warbler,
 30.
 Bay-breasted Warbler, 30.
 Hermit Thrush, 30, 31.

Total number of species seen, 61.

Total number of species seen during summer, 77.

CRITICAL NOTES ON NEW AND OLD GENERA OF PLANTS.—II.

Proposed Thalictum Segregates

BY J. A. NIEUWLAND

In some of our manuals of botany *Syndesmon* and *Thalictum* are by position kept so far apart that it seems as if it were intended to destroy their obviously close relationship. Michaux¹ reduced the Rue Anemone to *Thalictum*, following Linnaeus' idea that habit was scarcely a character for generic distinction. There are, however, groups now aggregated under the name *Thalictum* that are more different from one another than any separate one is from the long and universally recognized *Syn-*

1. *Thalictum anemonoides* Michx. Fl. Bor. Am., I, p. 322 (1803).

desmon. *Thalictrum clavatum* has already been recognized as sufficiently distinct from *T. foetidum* typical of the genus as to have been segregated under the name *Physocarpum*.² There was, however, an older *Physocarpum* Necker, (1790). To replace *Physocarpum* Bercht. and Presl. I suggest **Sumnera**, in honor of Dr. George Sumner, an early American botanist, who wrote one of our first works on physiological botany.

Dr. Greene has already emphasized the great difference between our polygamous and dioicous American Rues and the real typical Rues, of which we have, in the limits of Britton's *Illustrated Flora* only *T. alpinum* a plant with perfect flowers and racemose inflorescence. He has suggested that the allies of *T. canadense* (i. e., *T. Cornuti* or *T. polygamum* Muhl.) constitute "at least subgenerically as *Leucocoma*"³ a group apart. Either of the above mentioned sections were a more distinctly good genus apart from *Thalictrum* than *Syndesmon*, and they would seemingly deserve recognition as genera. Following is a resumé of synonymy of some of our American plants:

Sumnera Nwd., Nom. nov.

Physocarpum, Bercht., and Presl. l. c. (1823), not *Physocarpum* Necker, Elem., II, p. 164, (1790).

Sumnera clavata (DC.) Nwd. *Physocarpum clavatum* Bercht and Presl, l. c. *Thalictrum clavatum* DC. Syst. I, p. 171 (1818).

Leucocoma (Greene) Nwd. Nov. gen., [Subgenus or section *Leucocoma* Greene, l. c.]

Plantae aestate florentes dioicae (vel polygamae?), fructibus sessilibus, ovato-oblongis, longitudinaliter striatis, vel nervatis foliis exstipellatis compositis vel decompositis in utroque sexu diversis, floribus paniculatis, petalis nullis, sepalis 4-5, staminibus multis exsertis, aliquando clavatis. Typus. *Thalictrum canadense* Miller. (*T. polygamum* Muhl.).

Leucocoma canadensis (Miller) Nwd.

Thalictrum canadense Miller, Gard. Dict., Ed. 8, (1768), *Thalictrum polygamum* Muhl., Cat., 54 (1813), *Thalictrum Cornuti* T. and G., Fl. N. A. I., p. 38 (1838).

2. Bercht. and Presl, Rostl. i. Ranunc., p. 14 (1823).

3. Greene, E. L., Leaflets, II, p. 55, et praec., 89 et seq. (1910).

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CONTENTS

Forest Arboreta	<i>Charles M. Dow</i>	255
Some New American Lythra	<i>J. A. Nieuwland</i>	265
Migration of Our Birds in the Spring of 1913	<i>Brother Alphonsus, C. S. C.</i>	271
Notes on Our Local Plants	<i>J. A. Nieuwland</i>	274
Some Common Birds	<i>Victor Carpenter</i>	283

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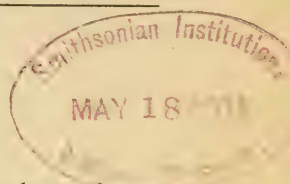
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FOREST ARBORETA.*

BY MR. CHARLES M. DOW.



I am to have the privilege of talking to you about forest arboreta. I shall extend that privilege somewhat, and talk a little about forests and forestry as well.

A practical man would satisfy himself as to the reasons for doing a thing before he considered the method for doing it. Before we take up the question of the method of establishing a forest arboretum, let us first see whether such an object lesson in forest planting is necessary or desirable.

A lecturer in the science of medicine would not be likely to impress or properly instruct his students, did he talk glowingly about the hospitals, but omit all reference to the patients themselves. And I think we would all be disappointed, if we attended a lecture on scientific farming and listened to a lengthy dissertation on hoes and plows, and rakes and fertilizers—and heard not a single word about seeds and crop yields, and how to harvest them.

It is the same with forestry. Before a man talks about an arboretum, or about silviculture, or forest management, or forest utilization, or before he advises others to practice them, he should be wholly sure in his own mind that all these things are wise and necessary and wholly practicable. I want to make this point very clear—the need for being sure about the justification and the need for doing the thing before we talk about the method of doing it.

* Address given at the meeting of the New York State Foresters' association, held in New York, January 24, 1914.

Mr. Dow is superintendent of Letchworth park and his work has attracted so much attention that he is frequently in demand as a speaker on forestry.

Suppose a man, a wise man, thinks of building a house—does he go right to employing an architect and buying brick and lumber, and hiring men, or does he go straight and hunt up a reliable contractor? I think the wise man first says to himself: "Can I afford to build this house? What can I spend on it? What are our needs for rooms? When is the best time to begin?" And then and only then he begins to think about how to build.

Or think of the artist with his camp stool and his easel, who faces some wide sweep of coast and sea, or mountains wreathed in clouds, or a similar and more intimate bit of Nature's handiwork—a babbling mountain stream perhaps, or a patch of wild flowers in the foreground and blue mountains in the distance. Does the artist set right in to mixing his paints and sketching in the picture? First he asks himself: "Is there a picture there? Does it compose? Does it tell a faithful story as true pictures do?"

I am not a professional forester in the technical sense, but a business man who has dealt in private and some public affairs, an American citizen, and therefore deeply interested in the forest and its welfare. I did not become enthusiastic over forest arboreta in general and over one forest arboretum in particular until came to realize that such object lessons were greatly needed to help bring this whole great principle of practical forestry into effect.

First, however, I had to convince myself that practical forestry was needed in America. I looked about me, and I travelled. I travelled somewhat widely. And the more I looked, the more I saw—apart from all matters of statistics—that wherever trees are, men follow. And I saw that these men, this army of loggers, which contains no fewer numbers than the army of the United States, is busy everywhere. For the loggers are busy in the resinous snow-laden north woods and in the forests of the Lake states. They are busy in the Rocky Mountains from Montana to Arizona, among the Lodgepole and the Western yellow pine. They are busy among the great red fir and cedar and sugar pine of the Pacific forests. And the size of this army of loggers grows steadily with the years.

So different are the conditions under which the loggers work, that some of them have to wear the warmest clothes to be had as a protection against the northern cold. Others work stripped to the waist in the southern pine woods. Others again, are clad

in homespun, and crack long whips over the slow moving oxen, as they snake the big logs of oak and chestnut and poplar out of the rich coves of the Blue Ridge. It is a varied army of loggers, facing many different conditions in this great country of ours. French Canadians, Americans, Irishmen, Scotchmen, negroes, Indians, mountaineers and plainmen, go to make it up; and the army is fighting forests quite effectively. And you will readily realize that the lumber cut in one year in the United States would make a row of wooden houses more than ten thousand miles long, or about the same distance as the mail route from New York to Hong Kong.

But, while lumbering is interesting and even picturesque to watch, while it is varied in its methods, ranging from steam skidders to the aerial tramways, to the logging railroads, and to river driving, and while each method has its elements of interest; still, the thing which counts most is not just how the loggers do their work but what results they leave behind.

I hold no brief against the lumbermen. They have been pioneers in industry. They have added greatly by their initiative, their abilities, and their remarkably skilful methods in turning forests into lumber and lumber into money, in the material development of these United States. But in the woods work they have done, their last thought as a rule has been the safety and perpetuation of the forest. The result has been to devastate some one hundred million acres of forest land in America. This land has been stripped so clean by careless use of the axe and the saw and the following fires, that trees must be planted by hand upon this vast area to bring back a commercial forest upon it, and thus to restore it to productive use.

We do not need to go far from home to see this waste. We have it at our doors, right in the Adirondacks. Some one has made the forceful statement that forestry is practical in the Adirondacks everywhere except right in the woods. I realize that here and there Adirondack forest owners have turned their thoughts to thrift. But on the whole the Adirondack forests are not being perpetuated or improved by careful utilization, but are being destroyed by reckless use.

This matter you all understand so well, it seems to me a matter not merely of science and theory and technique, but a matter of the common variety of common sense. As you are possibly

aware, I am a banker, somewhat interested in lumbering and farming. Bankers get into the habit of dealing not much in glittering generalities as in contrasting concrete cases with tangible results—things so concrete and tangible, for example, as capital and interest.

Let us apply the same wholesome standard and measure to this question of forestry. I hardly need to argue, at least not here, that forests are essential to all human welfare. Next to our need of food, comes our need of timber. And forests not only yield timber but they yield water as well; water for domestic use, for power, for irrigation, for every useful purpose known to man. Not only do forests render these two great services to mankind but they harbor game, they make the world beautiful, and they upbuild, as all history drives home the fibre, health and happiness of all human beings.

So I think that we may fairly assume that forests are needed. Now if they are needed, what is the common sense in utterly destroying them, or partly destroying them, or reducing their yield, and consequently reducing their usefulness to men? I am inclined to think that part of the reason why forestry is adopted so slowly by private owners in America, part of the reason why forestry is still looked upon by many as an obtruse science, is that it is not yet generally understood that forestry is the further application to the woods of the great basic principle of agriculture. The principle of so raising and tending crops and so husbanding the land, as to keep the land productive for all time.

I do not need to delve into statistics. You know how this nation stands, with respect to her forests. The forest is capital. The yearly growth is the interest thereon. That growth can be measured and taken just as can the interest from capital invested as money instead of as trees. This nation, as you are aware, has thrown away all considerations of the safety of the capital, and is rapidly spending both interest and forest capital about three times as fast as the forests grow. Our yearly use of wood in the United States is about three times as fast as wood is being produced in all our forests.

Such a procedure would not work in banks. I hardly need to tell you that it does not work well for a nation which will need wood and timber, and running streams, and all industries dependent upon the forest so long as the nation stands.

Where is the remedy for this wastefulness? For this obliviousness to the future? For this feverish appetite for wood, about twenty times as great per capita as that of the great nations of Europe. Where lies the remedy for this—what shall I say—for this somewhat perverted, artificially stimulated appetite? What are the methods under which our forests may be made not only storehouses, but factories of wood? Three great forces must work together to save our forests—the nation, the states and individual citizens. No one force can in time accomplish adequate results in forest conservation.

Assuming effective co-operation between these three great forces, these are the things Americans need to do: First, to protect all forests from fire. That is the fundamental thing. The first duty of any man to whom is entrusted the funds of other men is to see to it that they are made safe, so far as safety is humanly possible. Our first duty towards the forests is precisely the same duty. To make them safe not only from destructive logging, but first of all, to make them safe from their arch-enemy—fire. Once that is done, once that great step is fully taken by co-operation between the states and the individual land owners—the nation already has its rangers in the national forests to man the fire lines—once that essential step is taken, the next step is right methods of forest management. I hold the conviction that foresters have kept this matter of forest management, this matter of practical silviculture which is what your forest management really is, a little too guarded from the public mind. For though he be a layman, as soon as a man conceives the basic idea of what silviculture means, then if he be reasonable he can no longer oppose its application or fail to appreciate its obvious benefits.

To me, one of the most inspiring phases of forestry is the way in which the forester acquaints himself with the complex and many-sided life of that city of trees, which is what the forest really is. The way in which he looks upon the trees, a good deal as masters of men must look upon the people whose energies they direct. The way in which he studies the fighting qualities of the trees, which is what the silvicultural characteristics really are, and so designs his forest methods, so fixes diameter limits of cutting, so provides for protection of young growth, so reduces lumbering to a careful, culling process, that the whole struggle

for existence in the forest is directed and guided to useful and productive ends.

I trust I am not a fanatic on the subject of Forest Aboretia. Perhaps I realize no less clearly than you do, that forest conservation in America depends chiefly upon reproduction from self-sown seed, following careful and conservative cuttings. But I also realize that before our National Forest problem is adequately solved, before we have put to use, and to the best use, every acre of land in America—and we shall not stop our efforts until then—that we must undertake and carry out a national task in forest planting, which is vaster than the same task which any other nation has ever faced.

In regard to tree planting, the United States naturally falls into three regions—the Eastern, the Central and the Western. The Eastern region is that one which lies east of the great prairie states. In it is a vast aggregate of denuded lands suitable only for forest growth on which as the result of repeated fires following logging, natural reproduction has not and probably will not take place. Cut-over and burned-over lands in urgent need of forest planting in the Atlantic region, and in the northern portion of the northern states, alone aggregate over three and one-half million acres.

Then there is the great area of abandoned farm lands, mainly in New England and in the southern mountains; and then there are the wood lots rendered unproductive by missue, on which planting is essential to bring back the forest crop.

The Central region comprises the prairie country. Tree planting is urgently needed there to protect crops from wind, to grow timber for ordinary farm purposes in a mainly treeless country. In the far west the planting problem is mainly federal and on it a good beginning has been made.

To sum up, without going too deeply into the dry realms of figures and statistics, we have planted in the United States just about one acre in every ten thousand acres thus neglecting our duty to ourselves and those who follow us, to plant forest trees.

There is the task. Now what is needed for its accomplishment? As I see it, these are the main things: A much more wide and more definite knowledge on the part of the landholding citizens of the returns and profits which follows to those who plant forest trees. Mention tree planting to the average man, and what is his response?

"Plant trees," he says—"Why I can't wait that long for my returns! Tree planting is all very well for states and governments but I am merely a man with a little span of life ahead of me. When I invest I must at least live long enough to harvest the crop."

You see that such men are apt to think not in terms of white pine, which, as you are aware, will yield box boards in something less than 30 years, or in terms of the quick-growing hardwoods which yield fence posts in eight or ten years and firwood in maybe ten more, and lumber in perhaps 30 or 40 years. Most men are apt to think of the results of tree planting in terms of long lived, slow growing oaks, which take perhaps a century to grow 12 inches through. To make the fact plain to such men, not only about money returns from tree planting but about how soon these returns can be had, is an urgent task before all foresters.

Now the next task. That is to get tree planting done so well that disappointment will not be the crop instead of posts or lumber or firewood. Successful tree planting is a wholly practicable thing. The Germans have demonstrated that fact for well over two centuries; and of course being foresters, you are well aware of the fact that today one-third of the reproduction in German forests is from planted trees.

But we do not need to go to Germany. Go to Baltimore, North Carolina, to the estate of George W. Vanderbilt. You will see forest plantations there, growing on steep hills which 20 years ago were bare and red and gullied by erosion and which today are already yielding useful products. If you do not care to go so far, why then travel in your own state here at home, and see the admirable results already obtained by planting good forest stock from the splendid state nurseries.

Successful tree planting is a practical thing; so is successful farming; but there are farmers who fail. Now what is needed in order to insure as low a percentage of failure as possible among tree planters? My impression is that object lessons are needed more than anywhere else. One can not learn how to be a forester from books alone. I will affirm with equal vigor that one can not learn how to be a banker from books; and possibly we will agree that men can not learn how to do good tree-planting wholly from books. They need to see the thing in operation. Of course the obvious answer is, as I have just stated, that successful planta-

tions are to be seen in New York state and elsewhere in America.

But, can you conjure up a life-sized picture of an up-state farmer, a thrifty, cautious farmer, travelling east and west and north and south, and spending largely of his means to see plantations which contain the trees he wants or the trees which he should or might or could consider setting out on his worn-out lands, or in his woodlot, or elsewhere where trees are needed on his farm?

You might say: "Why are forest arboreta needed? There are a great many arboreta which contain practically every kind of useful tree. Let the prospective tree planter inspect those.

There are such arboreta at Harvard, and elsewhere. Deep and undying credit and honor is due to Dr. Sargent and the other eminent gentlemen who established them. They serve a most valuable purpose to landscape architects, to foresters, to land owners and to all classes of men who wish to study the habit and behavior of individual trees, but they are not planted in forest conditions.

I have made some study of arboreta around and about the world. I think I may say I have seen with some degree of thoroughness nearly all the great tree arboreta of the world, both in America and foreign lands. I do not need to recount to you who are foresters the wonderful living museum of trees in the Arnold arboretum nor do I need to describe the great arboretum in Kew Gardens, near London, where many foresters have worked, including possibly some of yourselves; nor do I need to describe the great arboreta in semi-tropical countries, as in Ceylon on the Island of Java, or which are in the making in several other foreign lands.

I am thankful as an American citizen for the Arnold arboretum and for all such wonderful and useful evidences of the great ability and devotion of scientific men. In promoting, as we have done, the establishment of forest arboretum at Letchworth Park I feel we are simply carrying the arboretum idea to a further progressive development. For I am convinced we should have here in America, not only tree arboreta, but a forest arboretum—not only one, but many.

My old friend, William Pryor Letchworth, a man of character and of great service to mankind, spent his leisure moments throughout a long and busy life in beautifying and developing his estate upon the banks of the Genesee river near Portage, about 60 miles from Buffalo. In the twilight of his life, Mr. Letchworth felt more

and more the need for forest conservation. And through his wide vision and his great generosity, he left Letchworth Park to the people of New York as a public park; and he left a very definite request that it should be used, so far as practicable, for purposes of useful and educational afforestation, and he also left the means for its accomplishment.

I shall always remember my talks with Mr. Letchworth on this subject. And it was with a vigor inspired both by my friendship for him and by my contempt of the great needs of such an object lesson in tree planting as the custodians, The American Scenic and Historic Preservation society, are now establishing at Letchworth Park, that I have devoted all the time I could to the development both of the forest arboretum idea and of the work itself upon the ground.

Our purpose is to develop the forest arboretum at Letchworth Park deliberately—forest arboreta do not spring up like mushrooms over night—and in doing so establish a great object lesson for this region, illustrating the results of forest planting. We wish to see established at Letchworth Park—and a small but satisfactory beginning has already been made—blocks of planted forests seldom less than an acre in extent, and each containing a useful tree or a useful combination of trees which will grow in that vicinity. We want foresters, farmers, landscape gardeners and tree planters, present or prospective, to go to Letchworth park, to walk among these planted blocks of forests, to make a right selection for their uses; and then to go home and plant forest trees themselves.

At the inception of the movement the principle upon which the Letchworth arboretum was to be established and certain plans for carrying out the principle were adopted by the Custodian society. This principle and these plans are in part as follows:

“The principle upon which the Letchworth arboretum be established is that it shall consist of a permanent collection of the various species of the world’s timber trees likely to thrive in this northern climate, planted scientifically to test their value and illustrate their processes of development, thus supplying not only knowledge for knowledge’s sake, but also knowledge for practical use.

In carrying out that principle we will have a collection of the valuable timber trees of the world and the Letchworth arboretum

will become the first of its kind, and its contribution to the cause of forest conservation in the United States will be of great economic and scientific value.

After the arboretum has been established, planted singly and in groups will be every important tree species with which experiment under local conditions of soil and climate will justify, and visitors will thus have ample opportunity to study the value of trees of many kinds for ornamental planting, but the object lessons of enormous economic significance which will lie spread before their eyes will be blocks of planted forest in each of which has been set out one or more kinds of trees of commercial importance.

By this course Letchworth Park will aid materially in laying an exact scientific basis for the successful extension of practical forestry in the United States. Every practical step will be taken, not only to insure results of the highest scientific value from forest work at Letchworth Park, but also to develop its usefulness as an object lesson to all park visitors."

I wish with all my heart that this object lesson were in its full fruition. But I do not need to say to foresters that forest trees grow slowly not fast. So possibly after five years, certainly in ten, the Letchworth Forest arboretum will have some useful forest lessons to teach; for by that time the little trees will be up in forest formation.

In the meantime we are making experiments with different species; and we are doing some things which will, and which will not, and which perhaps, may work! All men must do such things who would find out new and useful facts for the uses of other men.

I am hopeful that the Letchworth forest arboretum will be only a beginning. I wish to see such forest arboreta established in other regions of the United States; one for example, in the southeast, in the region of the southern pines; others in the Rocky mountains; others on the Pacific coast; and above all in the far southwest where trees are needed more than anywhere else in all America.

This then, is the central idea in the forest arboretum at Letchworth Park—to help so far as it can tree planters and therefore foresters to bring back trees successfully upon land where trees only can be profitably grown.

Just a word in closing this whole matter of forestry. I believe

that there are in America no more useful citizens than foresters. I think there are no higher types of American citizenship than exemplified by great foresters. I see for the work, unless my vision is all wrong, a great and growing and a most productive future. Upon your zeal, upon your training, and upon your experience and that of other foresters, depends more than anything else the future of the forests of America. From the far-flung national forests, set among the great mountain ranges of the west, to the wood-lots and the timber tracts right here at home, lies your work. I hope that the future of the forests of America will be safe in the hands of American foresters.

SOME NEW AMERICAN LYTHRA.

BY J. A. NIEUWLAND.

Lythrum cordifolium nov. sp.

Planta glabra gracilis cum ramulis tenuibus permultis et foliis parvis ovatis crassiusculis omnibus magnitudinis aequalis circa 6-8 mm. longis et 2.5-4 mm. latis strictissime oppositis, apice acutis vel obtusiusculis, basi latissime cordatis vel rotundatis sessilibus, marginibus subaspere strigulosis; floribus perpaucis ad ramulorum apices oppositis, axillaribus subsessilibus, cum duobus bracteis linearibus sub hypanthio striato, 5 mm. longo. Calix breviter denticulatus vel fere edentatus, et sum appendicibus inter sepala longis recurvatis subulatis. Florum aliae partes ignotae.

Plant very slender glabrous with long slender branches, and numerous very small ovate cordate thickish leaves, about uniform in size and shape throughout, about 6-8 mm. long, 2.5-4 mm. wide strictly opposite, acute or obtusish at the apex and broadly cordate to rounded sessile at the base. Margins roughish strigulose. Flowers few aggregated near the ends of the slender branches axillary, opposite, subsessile with two small linear bracts below the hypanthium, which is ridged and about 5 mm. long. Calyx teeth very short, almost obliterated; intersepalal appendages or processes long, recurved, subulate. Other flower parts unknown as the specimen was in bud from which the description was made.

The specimen is rather young; the flowers not yet fully

developed. The vegetable characters are, however, so striking as to warrant segregation on these marks alone. The type is in the herbarium of the United States Department of Agriculture, collected by S. B. Buckley somewhere in N. Carolina, Georgia, or Florida. "Distrib. by the Shaw School of Botany." No more details are given on the label.

By vegetative characters alone the plant deserves to be distinct from any other *Lythra* to which it may be referred. The leaves are as strictly opposite and decussate as in *L. lineare* Linn., and yet as evident from their description not at all like those of typical *L. alatum* Linn. The slender separate twigs have the long scarcely branched appearance of the plant called by some *L. flagellare*, but the cordate broad leaves distinguish it from this. The calyx and hypanthium are of a totally different kind. The mode of branching is decidedly divaricate opposite, and more leafy. The hypanthium differs too in being ridged or even creased.

The plant differs from *L. lineare* Linn. in the shape of the leaves which are broader and shorter, the branches are tetragonal or even winged, but the habit about the same.

From *L. gracile* Benthams, a Mexican plant, its nearest ally in appearance of habit and branching it differs by having broader oval leaves shorter than the internodes. Though the branches are long and gracilent the flowers have a different calyx, rather more like *L. alatum* with long reflexed appendages than calyx segments or teeth. These in *L. gracile* Benthams are subequal. The hypanthium, deeply ridged in *L. cordifolium*, is only slightly striate or terete in *L. gracile*. The latter, moreover, is suffruticose.

***Lythrum dacotanum* nov. sp.**

Planta glabra caule et ramis subteretibus aliquantulum alatis, foliis lanceolatis, sessilibus vel basi rotundatis vel subcordatis, acutis vel acuminatis, marginibus scabris, 2.5-4.5 cm. longis subtus pallescentibus facie superiore viridibus: foliis inflorescentiae permultis divaricatis vel reflexis, tenuioribus sibi propinque aggregatis, 1.5 cm. longis vel longioribus, flores axillares excedentibus: ramis paucis virgatis, elongatis. Flores magni circa 1 cm. longi, staminibus 6, longe exsertis, stylo incluso vel haud exserto etiam fructu facto; antheris suborbicularibus subnigris; ovario circa 2 mm. longo; stylo et stigmate circa 3 mm. et calice circa 6 mm. longo, subsessili, cum duabus bracteis

parvulis ad basim; petalis obovatis circa 5 mm. longis 3.5 mm. latis. Calyx triangulo-dentatus appendicibus longis, subulatis, reflexis, calicis dentes 3-plo excedentibus.

Plants glabrous with roundish stems which are slightly winged; leaves 2.5-4.5 cm. long, lanceolate acute or acuminate, sessile rounded or subcordate at the base, scabrous margined, rather thin, pale below and dark green on the surface. Leaves of the inflorescence very numerous large widely spreading or reflexed, closely aggregated 1.5 cm. or more long exceeding the axillary flowers. Branches several long wand-like. Flowers rather large about 1 cm. in length or slightly more. Stamens 6 long exerted, style included or barely exerted even in fruit. Ovary about 2 mm. long: style and stigma nearly 3 mm. long, calyx nearly 6 mm. long, hypanthium subsessile with two minute bracts near the base. Petals obovate nearly 5 cm. long, 3.5 broad, calyx teeth, broad triangular, processes long subulate spreading or reflexed about three times as long as the calyx teeth.

Type No. 240979 of the U. S. National Museum from South Dakota, collected near Sioux Falls in August 1892 by J. J. Thorner. Another specimen is numbered 516395, otherwise alike; both from the herbarium of Thomas A. Williams. So different does the plant appear from its nearest ally *L. alatum* Linn. in habit as to seem at first sight more like *L. Vulneraria* Linn. with which, however, it has no nearer relationship though intermediate perhaps.

***Lythrum parvulum* nov. sp.**

Planta simplex vel minus ramosa circa 3 dm. alta vel minor e radice crasso plus minusve erecto ligneo, rhizomata lignosa emittens, caulibus pluribus 4-angulatis cum alis decurrentibus e basi foliorum stricte sessilium; foliis pallescentibus utraque facie, vel glaucis 5x9 mm. usque 7x18 mm. latis et longis ovalibus vel oblongo-linearibus, abrupte acutis vel obtusiusculis, basi stricte sessilibus, cordatis vel rotundatis vel infimis aliquando subcuneatis et obovatis, et in superioribus caulibus praecipue perparvas stipulas in fine alarum habentibus, foliis in inflorescentia linearibus minoribus, margine striguloso, plerumque basi cordatis vel rotundatis. Flores circa 1 cm. lati petalis obovatis colore earum *L. alati*, mucronatis calice circa 6 mm. longi cujus dentes breves obtusi membranosi, cum appendicibus brevibus, divaricatis, triangulatis, hypanthio cylindrico sub dentibus calicis angustato:

staminibus exsertis inaequalibus; stylo circa 7 mm. exserto; ovario subcylindrico circa 4 mm. longo.

Plant not much branched about 3 dm. high or smaller from a rather thick more or less upright woody root sending from the base of the stem rather thick woody rootstocks. Stems several to many and with the branches 4-angled and wings running down from each side of the insertion of the strictly sessile leaves. Foliage and especially the stems very pale. Leaves somewhat glaucous oval to oblong, linear or linear abruptly acute or obtusish, base strictly sessile cordate to rounded, some of those on the lower part of the plant at times somewhat cuneate and obovate, and even higher on the stem with noticeable cuspidate stipular terminations of the wings of the stem at the leaf insertion. Leaves, thick about 5x9 mm. to 7x18 mm., the floral ones smaller mostly alternate and with cordate or rounded base and rough margins, the midrib of all very pale. Flowers about 1 cm. wide; petals obovate, of the same color as those of *L. alatum* mucronate tipped; calyx about 6 mm. long its teeth obtuse somewhat membranous; appendages short triangular somewhat spreading calyx tube cylindrical apparently narrowed below the teeth; stamens exerted unequal. Style with hemispherical stigma exerted about 7 mm. Ovary subcylindric extending about 2-3 the height of the hypanthium. Flowers short-stalked with two minute oval pointed bractlets at the base of the hypanthium.

As type may be selected No. 442510 of the U. S. National Herbarium, i. e. S. M. Tracey's 8071 from Abilene, Texas, collected May 24, 1902. The plant is labeled *L. ovalifolium* but it differs from this with which it was long confounded by winged stem and cordate leaves absent in typical specimens of Gray's plant. No. 265839 of the U. S. National Herbarium collected at Ulysses, Kansas, by C. H. Thompson (his no. 34) may be referred here. The plant is marked *L. alatum* which it in no way resembles. No. 10 of G. C. Nealy collected June, 1892, at Corpus Christi, Texas, is another good example, but a rather small form scarcely branched at all except the upright branches from the creeping or prostrate stems or rhizomes.

Lythrum flagellare Shuttleworth ms.¹ also Koehne, Engler's

¹ The name *L. flagellare* Shuttleworth, at least in as far as it is different from *L. ovalifolium* Engelm., was either never published or is a *nomen nudum*. When first used in print as above noted by Koehne it was used as a synonym

Bot. Jahrb. I., p. 321, (1881) as a synonym of *L. ovalifolium* Engelm.

Planta perennis erecta vel ascendens caulibus pertenuibus a rhizomate repente tenui, lignoso, assurgens 1-3 dm. alta, foliis crassis, rigidis, glaucis, ovatis ovalibus vel obovatis, *distincte sed breviter petiolatis*, cauli subtereti sine alis, simplici vel subsimplici (aliquando minus ramoso); foliis cum margine striguloso, basi rotundatis vel subcordatis, omnibus fere aequali magnitudine, divaricatis vel erectiusculis 5-13 mm. longis 3-6 mm. latis. Flores calice subcylindrico vel cylindrico-campanulato, subsessili minute ad basim bibracteato, pedunculo fructifero 1 mm. longo, dentibus calicis apice rotundatis mucronatis; appendicibus erectis vel divaricatis, lanceolatis, subulatis, dentes calicis duplo excedentibus: Flores quoque pauci axillares tantum 2-10, binis oppositis, in unoquoque cauli vel ramo elongato; petalis purpureis vel pallidis oblongis; staminibus subaequalibus exserta usque 2 mm., et in aliis plantis cum stylo aequemodo exserto et staminibus inclusis. Petioli, calix, et nodi purpurei sunt.

Plant, erect or ascending, perennial very slender 1-3 dm. high from slender woody repent rootstocks or runners. Stem subterete usually simple or but little branched purplish with scarcely any trace of wings or angles and only a minutely raised white line descending from both sides of the leaf insertions. Leaves thick rigid, roughish margined, ovate, oval, or sometimes obovate distinctly though short-petioled, rounded or subcordate at the base and obtuse at the apex, all on the same shoot nearly equal in size, spreading or slightly erect. 5-13 mm. long and 3-6 mm. wide. Calyx subcylindric gradually widened upward nearly sessile with two linear membranous bracts at the base, pedicel about 1 mm. long in fruit, bibracteolate at the middle. Calyx segments rounded mucronate appendages, lanceolate subulate twice as long. Petals pale purplish, oblong two-thirds as long as

to the plant of Engelm. The plant to which Shuttleworth applied the name in MS. is, however, quite a different plant from *L. ovalifolium*. Owing to this peculiar condition of things there may arise doubt as to the use of the name *L. flagellare* for Shuttleworth's plant, when its first use was that of a synonym for *L. ovalifolium*. We prefer to keep Shuttleworth's inedited name at the same time establish the identity of the plants.

Should nomenclatorial quibblers consider *L. flagellare* inapplicable we suggest as a second choice *L. tenue* for the plant here for the first time described, as far as we know.

the calyx tube and rather narrow. Leaves glaucous, the petioles calyx and nodes of the stem purple glaucescent. Flowers few solitary in opposite axils in 1-5 pairs only. The stems then produce several flowerless nodes and branches above, the branches again producing few opposite solitary on their upper ends. Stamens subequal exserted about 2 mm. in short-styled plants, the styles equally exserted in plants with included stamens.

Plant readily distinguished from *L. ovalifolium* by its habit and woody stems, *L. ovalifolium* is an herb with the habit of *L. alatum*. Its leaves are different in shape the lower obovate or even suborbicular and all *thin and membranous*, the stems winged. *L. flagellare* somewhat shrubby at least below blooms with only a few flowers on the stems which soon elongate and branch. *L. ovalifolium* though at first simple later branches diffusely and blooms successively and indefinitely becoming about 3 dm. high. The calyx is shorter and comparatively wider. The shape and texture of the leaves distinguishes it at a glance from *L. parvulum*, though the habit of the two is more nearly similar.

Good examples of *L. flagellare* in the U. S. Herbarium are numbers 442240, S. M. Tacy's 7594 labelled *L. flagellare* Shuttlew. Brandentown, Fla., July 20, 1901. Also two other specimens from Florida collected in 1890 by J. H. Simpson in the Herbarium of the U. S. Dept. of Agriculture; also A. P. Garber's No. 21, labelled *L. Hyssopifolia* L. Sarasota June, 1878 (No. 249775 also in the same herbarium).

These two have been hitherto confounded under *L. ovalifolium*² Engelm, a very different plant from different region. Lindheimer's plant No. 609 "Fl Texana exsiccata" is typical *L. ovalifolium* as described by Gray as *L. alatum* var. *ovalifolium* in "Plantae Lindheimerianae." Another such typical specimen is A. A. Heller's collected in Texas, Kerrville; 1885 U. S. Herbarium No. 214035. No. 502167 U. S. Herbarium collected by Lindheimer in 1809 at Commanche Spring, New Braunfels, Tex. These two were carefully examined and compared with the original descriptions of publication and found to differ totally in material respects from *L. parvulum* as also from *L. flagellare*.

Department of Botany,
Univ. of Notre Dame, Ind.

² Engelmann in A. Gray, Boston Jr. Nat. Hist. VI., p. 187, (1850).

³ p. 187. Walpers Ann., 2, p. 539.

MIGRATION OF OUR BIRDS IN THE SPRING OF 1913.

BY BROTHER ALPHONSUS, C. S. C.

It has been stated by some writers that the Bluebird is not our earliest spring migrant. My observations for nine years show that in this locality this species is usually the first to arrive in spring, my record for the present year being the earliest I have ever made for the species.

The dates of arrival for the Robin, Song Sparrow, Meadow-lark, Killdeer, Bronzed Grackle are a week later than the usual time for these species to arrive. Cold weather and snow were the cause of the delay of these species.

The Golden-crowned Kinglet, Phoebe, Cowbird, Kingfisher, Field Sparrow, Mourning Dove and Redwinged Blackbird arrived on dates that are usual ones for these species to appear. Warm weather, following soon after the arrival of the Robin, was the reason that made these birds come a week or more earlier than they would have done if it was cold and stormy.

In April the weather continued warm for the season and the dates for nearly all the species that arrived in this month were regular. This year several species that usually arrive in May appeared in April. Such were the Baltimore Oriole, Yellow Warbler and Redstart.

In May the following species showed exactly the same dates as in 1912: Kingbird, 3; Crested Flycatcher, 6; Chestnut-sided Warbler, 5. In the dates of the following for 1912, there was but one day's difference from 1913: Chimney Swift, 1; Orchard Oriole, 4; Black-throated Green Warbler, 3. The following showed eight days or more between the dates of the two years: Scarlet Tanager, Cedarbird, White-crowned Sparrow, Red-eyed Vireo, Red-breasted Nuthatch, Magnolia, Black-poll and Black burnian Warblers, Wood Pewee. The difference in days for the same years for the following is indicated by the number after the name of the species: Nashville Warbler, 3; Bay-breasted Warbler, 3; Canadian Warbler, 4. The Tennessee and Sycamore Warblers were not observed this spring.

Two species whose dates of migration are found in June are

the Purple Martin and Yellow-throated Vireo. The explanation I should offer for the lateness of the Yellowthroat is that this species is locally distributed and its appearance in some places is only occasional. But you may ask, how does that account for its absence as a migrant when most other species are readily found? I should answer that the species is not abundant anywhere near our locality and that the individuals which migrated in our vicinity went directly along their route to their summer homes.

As to the Purple Martin, I am sure that my date, June 1, is not correct for the species, for formerly the first Martins appeared here late in April. No suitable nesting places are any longer available for the birds at Notre Dame, which have all left the locality and now nest in the neighboring city of South Bend. But the dates given for these two species are interesting as showing when they were first seen by a daily observer of bird-life within a restricted territory.

The writer made his largest record of migrating birds this spring, and had he been more fortunate in his observation of the warbler family, the number would probably have exceeded a hundred migrants.

FEBRUARY.

15 Northern Shrike
19 Bluebird

24 Brown Creeper

MARCH.

9 Robin
11 Song Sparrow
12 Meadowlark
12 Killdeer
12 Bronzed Grackle
15 Herring Gull
15 Canada Goose

19 Golden-crowned Kinglet
19 Phoebe
20 Cowbird
22 Kingfisher
22 Field Sparrow
23 Mourning Dove
25 Red-winged Blackbird

APRIL

1 Flicker
1 Chickadee
2 Vesper Sparrow
3 Sapsucker
5 Fox Sparrow
6 Tree Sparrow departed

6 Towhee
8 Loggerhead Shrike
10 Golden-crowned Kinglet departed
11 Barn Swallow
12 Brown Thrasher

15 Chipping Sparrow	22 Brown Creeper departed
16 Ruby-crowned Kinglet	23 Goldfinch
16 Chicken Hawk	23 Red-breasted Nuthatch
18 Pine Warbler	23 Swamp Sparrow
18 Myrtle Warbler	24 Sapsucker departed
19 Fox Sparrow departed	24 Spotted Sandpiper
19 Hermit Thrush	26 Warbling Vireo
20 Redstart	28 Short-billed Marsh Wren
21 White-throated Sparrow	28 Sparrow Hawk
22 Tennessee Warbler	29 Baltimore Oriole
22 Yellow Palm Warbler	30 Yellow Warbler
22 House Wren	30 Snowbird departed

MAY.

1 Whip-poor-will	11 Blackhurman Warbler
1 Screech Owl	12 Least Flycatcher
2 Chimney Swift	13 Scarlet Tanager
2 Black-throated Green Warbler	14 Wood Pewee
3 Catbird	15 Myrtle Warbler departed
3 Kingbird	16 Cape May Warbler
3 Orchard Oriole	16 Red-breasted Nuthatch
3 Ruby-crowned Knight departed	16 Bay-breasted Warbler
4 Cardinal	16 White-crowned Sparrow departed
5 Bobolink	16 Magnolia Warbler
5 Chestnut-sided Warbler	16 Nighthawk
5 Water Thrush	16 Yellow-billed Cuckoo
5 Rose-breasted Grosbeak	16 Cedarbird
6 Prairie Warbler	17 Black poll Warbler
6 Blue Gray Gnatcatcher	17 Yellow Palm Warbler departed
6 Nashville Warbler	17 Red-breasted Nuthatch departed
6 Crested Flycatcher	21 White-throated Sparrow departed
7 Yellow Rail	21 Black-billed Cuckoo
7 White-crowned Sparrow	23 Canadian Warbler.
9 Black and White Warbler	23 Kentucky Warbler
9 Alder Flycatcher	23 Bay-breasted Warbler departed
9 Red-eyed Vireo	
10 Tree Swallow	
10 Blue-headed Vireo	

24 Black and White Warbler departed	28 Hummingbird
24 Black-throated Green Warbler departed	28 Carolina Wren
25 Magnolia Warbler departed	29 Water Thrush departed
25 Chestnut-sided Warbler departed	29 Black-poll Warbler departed
25 Canadian Warbler departed	29 Redstart departed
27 Yellow-breasted Chat	30 Blue-headed Vireo departed
27 Yellow-bellied Flycatcher	30 Least Flycatcher departed
	30 Hermit Thrush departed
	30 Maryland Yellowthroat

JUNE.

1 Purple Martin	18 Yellow-throated Vireo
7 Bobwhite	

Total number of migrants seen, 92.

NOTES ON OUR LOCAL PLANTS.—VI.

BY J. A. NIEUWLAND.

ORDER 24. CARYOPHYLLINEAE.

Bartling, Ord. Nat. p. 295 (1830) Bart. and Wend., II.,
p. 137 (1824-5.)

Centrosperma Engler in Engler and Prantl, Pflanzanfam. Nachtr. p. 346 (1897), Engler, Führer Bot. Gart. Breslau, p. 36 (1836), *Chenopodiales* Britton, Manual, p. 367 (1901). *Caryophylleae* Lond. Hort. Britt. Cat. p. 501 (1830) (?).

Family 53. **SALSOLACEAE** Linnaeus, Classes
Plantar. (1738).

Holeraceae Linnaeus, Phil. Bot. p. 33 (1751), also (1755).
Oleraceae Zinn, Cat. Hort. Gott., p. 25 (1757) in part. *Chenopodeae* Vent. Tabl. II, p. 253 (1799), *Salsolaceae* Moq. in DC. Prod. XIII, 2, p. 41 (1849), *Chenopodiaceae* Less. in Linnaea IX, p. 196 (1834), *Cheiopodiaceae* Daubeney, Lect. Rom. Husbandry, p. 314 (1857).

BOTRYS Dioscorides III; 130, Pliny Nat. Hist. XXVII:8, 31, also Bauhin, Pinax, p. 138 (1623), *Chenopodium* Tabernaemont-

tanus ex C. Bauhin Pinax, p. 119 (1623) *Chenopodium* Tour., Els. p. 406 (1694) I. R. H. p. 506 (1700), *Blitum* and *Atriplex* sps. of the older authors, *Chenopodium* Linnaeus Syst. (1735), Gen. p. 67 (1737), p. 103 (1754), *Vulvaria* Bubani Fl. Pyr. I, 174 (1897), *Vulvaria* Dalchamps, Hist. p. 543 (1587), *Botrydium* Spach, Hist. l. c. p. 295, and *Chenopodium* Spach l. c. p. 300. Not *Botrydium* Wallroth (1815).

Botrys aromatica (Spach).

Botrydium aromaticum Spach, l. c. *Chenopodium Botrys* Linn. Sp. Pl., p. 219 (1753), *Vulvaria Botrys* (Linn.) Bubani l. c. p. 177. Lake Maxinkuckee (H. W. Clarke), Lake Co. (Hill), Clarke, Ind. (Umbach), Nos. 11332, Notre Dame, Ind., 11336, Sagunay, Laporte Co.

Botrys ambrosioides (C. Bauhin).

Chenopodium ambrosioides (C. Bauhin) Linn., Sp. Pl., p. 214. *Botrys ambrosioides mexiocana* C. Bauhin, Pinax, p. 138, (1623), *Ambrina ambrosioides*, Spach, Hist. Nat. Veg., V. p. 297 (1836). *Vulvaria ambrosioides* Bubani, l. c. p. 178.

Botrys anthelmintica (Linn.).

Chenopodium anthelminticum Linn., Sp. Pl., p. 220 (1753), *Chenopodium ambrosioides* var. *anthelminticum* A. Gray, Man. Ed. 5, p. 408 (1867), *Ambrina anthelmintica* Spach, l. c. p. 298. Millers, Ind.

Botrys glauca (Linn.)

Chenopodium glaucum Linn., Sp. Pl., p. 220 (1753), *Blitum glaucum* Koch, Syn. Fl. Germ., p. 608 (1837).

Millers (Umbach).

Botrys hybrida (Linn.).

Chenopodium hybridum Linn., Sp. Pl., p. 219 (1753). Lake Maxinkuckee, (H. W. Clarke), Lake Co. (Deam), Nos. 11713, 10335, 10418 Notre Dame, Ind.

Botry leptophylla (Moq.).

Chenopodium leptophyllum (Moq.) Nutt., in DC. Prod. XIII, 2, p. 71 (1849), *Chenopodium album* var. *leptophyllum* Moq. l. d. Nos. 9706 Dune Park, Ind., 10237 Mineral Springs, Porter Co. I have found the plant as far east as Hudson Lake, Laporte Co. It is spreading wherever there is sandy soil not far from Lake Michigan. Its presence at Hudson Lake is accounted for doubtless because of the sandy soil of this rather large inflake.

Botrys bosciana (Moq.)

Chenopodium boscianum Moq., Enum. Chen. p. 21 (1840).
No. 11528 Notre Dame, Ind.

Botrys alba (Linn.).

Chenopodium album Linn., Sp. Pl., p. 219 (1753).

Lake Co. (Deam), Laporte Co. (Deam), Nos. 1986 Notre Dame, Ind. (Powers), 10419 Notre Dame, Ind., 11351 Hudson Lake.

Botrys Berlandieri (Moq.)

Chenopodium Berlandieri Moq. l. c. p. 23.

No. 11350 Hudson Lake, Ind. The leaves of this specimen are nearly all decussate.

BLITUM Hippocrates, Affect., 526, Theophrastus, Hist. Pl., 1:9, Dioscorides, II:143, Pliny, XX:93,¹ Galen, II:1, etc.

Blitum Tragus, Camerarius, Dodonaeus, Matthioli, Lobelius, Caesalpinus, Gerarde, Anguillara, Tabernaemontanus, Brunfels, etc. *Blitum* Tour., Els., p. 407 (1694), I. R. H., p. 507 (1700), *Polysporon* Linnaeus, Syst. (1735), Gen., p. 6 (1754), Gen., p. 20 (1737), *Chenopodio-Morus* Boerhaave, Ind. Alt. Pl. p. 91 (1727), *Morocarpus* Ruppius, Fl. Jen., p. 271 (1727), *Polysporon* Lobelius Hist., p. 128 also Anguillara.

Blitum capitatum Linn., Sp. Pl., p. 4, (1753).

Chenopodium capitatum Aschers., Fl. Brand., p. 572 (1864), *Morocarpus major* Ruppius, l. c.

Nos. 11248, 11253 Notre Dame, Ind.

ATRIPLEX Hippocrates, Theophrastus, VII:1, Pliny XX:20, Columella III:11, X:377, Dioscorides II:145.

Atriplex Tragus, Dodonaeus, Lobelius, Caesalpinus, Fuchs, Castor Durante, Anguillara, Matthioli, Ruellius, Marcellus Vergilius, Gesner, V. Cordus, Lonicer, Camerarius, Thalius, etc., *Atriplex* Tour., Els., p. 405 (1694), I. R. H., p. 505 (1700), Linn., Syst., (1735), Gen., p. 317 (1737), Gen., p. 472 (1754).

Atriplex hastata Linn., Sp. Pl., p. 1053 (1753).

Atriplex patula Linn., Sp. Pl., p. 1053, l. c. *Atriplex littoralis* Linn., l. c. p. 1054, *Atriplex patulum* var. *hastatum* A. Gray, Man., Ed. 5, p. 405 (1867).

Lake Maxinkuckee (H. W. Clarke), Clarke, Ind. (Umbach), Hudson Lake, Laporte Co.

CYCLOLOMA Moq., Enum. Chen., p. 17 (1840).

¹ Daubeney thinks that the *Bliton* of Dioscorides is *Amaranthus Blitum* Lect., p. 315, Fée, Panckouck, Bubani to the contrary.

Cycloloma atriplicifolia (Sprengel) Coulter, Mem. Torr. Cl. V, p. 143 (1894).

Kochia atriplicifolia Sprengel, Nachtr. Fl. Hal. 2, p. 35 (1801)
Cycloloma platyphyllum Moq., l. c.

Lake Co. (Deam), Lake Maxinkuckee (H. W. Clarke), Laporte Co. (Deam), Dune Park (Umbach), Lake Maxinkuckee (H. W. Clarke), Laporte Co. (Deam), Dune Park (Umbach), Nos. 9184 Millers, also 9183 from the same place with perfectly green flowers, 9696 Dune Park. I have found it in Laporte, Porter and Berrien Cos.

CORISPERMUM Jussieu, Act., p. 244 (1712).

Corispermum Linn., Syst. (1735); Gen., p. 1 (1737), Dillenius Gen., p. 160 (1719), *Corispermum* Linn., Gen. p. 5 (1754), *Rhagrostis* Buxbaum, Cent., III, p. 30 (1729).

Corispermum hyssopifolium Jussieu, l. c. also Linnaeus and Dillenius. l. c.

Lake Co. (Deam) (Hill), Porter Co. (Cowles), Millers (Umbach), South Haven (L. H. Bailey), Nos. 9540, 1925b, Millers. Found also in Berrien, Laporte, Lake and Porter Cos.

Corispermum hyssopifolium var. **nitidum** Kit., I have found at Millers, Ind., (No. 1925 U. N. D. Herb.)

SALSOLA Caesalpinus [Herb. Tornab., 205:571 (1563)] De Plantis, p. 170 (1583).

Kali C. Bauhin, Pinax, p. 289 (1623), also Dodonaeus, Lobelius, Dalechamps, Camerarius, Matthioli, etc. Perhaps an older name than *Salsola* both of barbarous origin and form, being the name of a chemical and therefore objectional. *Anthylloides* Thalius Sylv. Herc., p. 16 (1588), *Alcali* Gesner Hort. Germ. (1561), [?(*Tragus* Dioscorides IV:51, Pliny XXI:13, 116)? See Bubani Fl. Pyr. I, p. 162-164.] *Kali* Tour. Els. p. 213 (1694), I. R. H. p. 237 (1700), *Salsola* Linn, Syst. (1735), Gen. p. 67 (1737), p. 104 (1754)

Salsola pestifer A. Nelson, Rocky Mt. Bot., P. 169, (1909).

Lake Co. (Deam), Whiting, Ind., (Moffatt), Laporte Co. (Deam). I have found it in Berrien, Laporte, Lake and St. Joseph Cos. On sandy fields west of South Bend it is very abundant and a great nuisance to farmers. I have seen large plants over a foot in diameter after being uprooted blown about the streets of the city by the prevailing west winds of this region. This occurs almost annually of late years especially in winter and early spring when

the plants are most easily loosened from the soil. The seed is thus scattered broadcast.

Family 54. **AMARANTHOIDEAE** Vent., Tabl. II,
p. 264, (1799).

Amarantaceae, Jussieu, Ann. Mus. Paris, II, p. 131 (1803).

GALLIARIA Bubani, Fl. Pyr., I, p. 184 (1897).

Amaranthus Linn, Syst., (1735), Gen., p. 286 (1737), p. 427 (1754), *Amaranthus* Tour., Els., p. 201 (1694), I. R. H., p. 234 (1700), not *Amarantus* Pliny XXI:8. 23, and of the ancients which is *Celosia* Linn.

Galliardia retroflexa (Linn.)

Amaranthus retroflexus Linn. Sp. Pl., p. 991 (1753), *Galliardia scabra* Bubani l. c. p. 187.

Millers (Umbach), Lake Maxinkuckee (H. W. Clarke), No. 11709 Studebaker's Woods S. of South Bend, Ind. Found in all of the counties within the region.

Galliardia spinosa (Linn.)

Amaranthus spinosus Linn. l. c.

Millers (Umbach), found also at South Bend, Ind.

Galliardia hybrida (Linn.).

Amaranthus hybridus Linn. l. c. p. 990.

Lake Maxinkuckee (H. W. Clarke), Millers (Umbach). Found also in Laporte, Berrien, and St. Joseph Cos.

Galliardia blitoides (S. Watson).

Amaranthus blitoides S. Watson, Proc. Am. Acad. XII, p. 273 (1877).

Lake Maxinkuckee (H. W. Clarke), South Haven, Van Buren Co. (L. H. Bailey), found also in Berrien, Porter, Laporte, St. Joseph Cos.

Galliardia graecizans (Linn.).

Amaranthus graecizans Linn., l. c. p. 990. *Amaranthus albus* Linn. Sp. Pl., p. 1404 (1763), *Galliardia albida* Bubani l. c. p. 185.

Lake Maxinkuckee (H. W. Clarke), Lake Co. (Deam), Nos. 10423, Hudson Lake, 11496, 11710, S. of South Bend.

AMARANTHUS Pliny XXI:8.

Amaranthus Dodonaeus Hist. Pl. p. 125 (1557), Ed. C. Clusius also Castor Durante, Caesalpinus, Gesner, Lobelius, Tabernaemontanus, etc. Not *Amaranthus* Linnaeus, *Celosia* Linnaeus, Gen. p. 34 (1737), p. 96 (1754), *Psittacus* Heister.

Amaranthus purpureus Dodonaeus, l. c. (1557).

Amaranthus cristatus Camerarius Epit. 792, also Noronha (1790). *Celosia cristata* Linn., Sp. Pl., p. 205 (1753).

I have seen it as an escape from gardens in the west end of South Bend where it is extensively cultivated by foreigners.

ACNIDA Mitchell, ex Linn., Act. Ups., "1741" (1746) Mitchell, Act. Ac. Leop. Carol., VIII and App. "1741" (1748). p. 28 also (1769) *Acnida* Linn., Gen., p. 453 (1754), Linn., Am. Acad. III, p. 18 (1756). For a discussion of the priority see Kuntze, O., Rev. Gen. I, p. 519 (1891).

Acnida tamariscina (Nutt.) Wood, Bot. and Flor., p. 289, (1873). *Amaranthus tamariscina* Nutt., Trans. Am. Phil. Soc. II, 5, 165 (1833-37) Clarke, Ind. (Umbach), Lake Co. (Deam).

Acnida tuberculata Moq., DC., Prod., XIII, 2, p. 278, (1849). Nos. 673, 11484, Notre Dame, Ind.

Family 55. **PHYTOLACCEAE** R. Brown, Tuskey, Congo, p. 453 (1818), also Bartling Ord. Nat., p. 299 (1830).

Phytolaccaceae Lindley, Nat. Syst., Ed. 2, p. 210 (1836).

PHYTOLACCA Tour., Els., p. 248 (1694), I. R. H., p. 299 (1700).

Phytolacca Dillenius, Hort. Elth., p. 218 (1732), Linn., Syst., (1735), Gen., p. 136 (1737), Hort. Cliff., p. 177 (1737), Gen., p. 200 (1754).

Phytolacca americana Tour., Els., l. c. (1694).

Phytolacca vulgaris Dillen., l. c. *Phytolacca decandra* Linn., Sp. Pl., p. 63 (1753), *Phytolacca americana* Linn., Sp. Pl., l. c. p. 441.

Lake Maxinkuckee (H. W. Clarke) (Deam), Laporte Co. (Deam), I have found the plant in all the counties.

Family 56. **CORRIGIOLACEAE** Reichenb., Moessl. Hand., I. l. p. 51, (1827).

Paronychieae Bartling, Ord. Nat., p. 300 (1830), also Lond. Hort. Brit. p. 517 (1830), *Paronychiaceae* Daubeney, Lect. Rom. Husbandry, p. 308 (1857).

ANYCHIA Michx., Fl. Bor. Am., I, p. 112 (1803).

Anychia canadensis (Linn.) B. S. P., Prel. Cat. N. Y., (1888).

Guerezia canadensis Linn., Sp. Pl., p. 90 (1753), *Queria canadensis* Britton, III, Fl. N. Am., II, p. 40 (1897), *Queria capillacea*

Nutt., Gen., I. p. 159 (1818), *Anychia capillacea* DC., Prod., III, p. 369 (1828), *Anychia dichotoma* Mich., l. c., p. 113.

Lake Maxinkuckee (H. W. Clarke), No. Notre Dame, Ind., 11493, 11257, S. of South Bend, Ind.

SCLERANTHUS Linn., Syst., (1735) [Nomen Tantum] Gen., p. 131 (1737), Hort. Cliff., p. 166 (1737).

Knawel Dodonaeus, Dillenius, Boerhaave, Ray, Ruppius, (Nomen barbarum) *Scleranthus* Linn., Gen., p. 190 (1754). *Knavelia* Heister, Syst., p. 11, (1748) *Knautia* Fabricius, Heist., Fl. Helm., p. 358 (1759)? *Knawel* Adans., Fam., II., p. 506 (1763).

Scleranthus annuus Linn., Sp. Pl., p. 406 (1753).

Knawel annuum Scopoli, Fl. Carn. Ed., II, 1. p. 298 (1772).

Nos. 9315 SW. of South Bend, Ind., near Lost Lake, 11735 Warwick State boundary, 9116, 9103, 2007, 6063, N. of Notre Dame, Ind., at Webster's station. Has become a weed at the last place.

Family 56. **NYCTAGINEAE** Vent., Tabl. II, p. 271 (1799).

Nyctaginaceae Lindley, Nat. Syst., Ed. 2, p. 213 (1836).

ALLIONIA Loeffling, Linn., Syst. Ed., 10 (1759).

Oxybaphus L'Her., Willd., Sp. Pl., I, p. 185 (1797).

Alliona nyctaginea Michx., Fl. Bor. Am., I, p. 100 (1803).

Oxybaphus nyctagineus Sweet, Hort. Brit., p. 429 (1830).

No. 9350 N. of Notre Dame, Ind., on the M. C. R. R. Very common along railroads especially the Lake Shore R. R. west of South Bend.

ADMIRABILIS Clusius, Pannon., p. 395 (1583).

Jalap Tour., Els. p. 105 (1694), *Jalapa* Tour., I. R. R., p. 129 (1700), *Mirabilis* (Riv.) Linn., Syst., (1735), Gen., p. 49 (1737), p. 82 (1754), *Nyctage* Royen, Lugd., p. 417 (1740).

Admirabilis peruana Clusius l. c. also Hist. Rar. Pl. (1601).

Mirabilia peruviana Gerard, Herb., (1597). *Mirabilis peruviana* Ray, Hist., p. 398 (1668) *Mirabile peruvianum* Morison, Hist., III, p. 598. *Miribilis jalapa* Linn., Sp. Pl., p. 177 (1753).

Plants were found near old dump piles south of the city of South Bend. That it may escape seems possible from the fact that the plant sows itself readily and regularly at Notre Dame in gardens where it was watched for the last five years.

Family 57. **AIZOACEAE** Br., Aschers., Fl. Brand., p. 60, (1864).

MOLLUGO Linn., Gen., p. 336 (1737), Hort. Cliff., p. 28 (1737), p. 39 (1754).

Mollugo verticillata Linn., Sp. Pl., p. 89, (1753).

Lake Maxinkuckee (H. W. Clarke), Clarke, Ind., (Umbach), Lake Co. (Hill), Laporte Co., (Deam), No. 1975 Notre Dame, Ind., (Powers). I have found it in every county in the region.

Family 58. **PORTULACEAE** Jussieu, Gen., p. 312 (1789)

Portulaccaceae Reichenb., Consp., p. 161 (1828).

TALINUM Adans., Fam. Pl. II, p. 245 (1763).

Talinum teretifolium Pursh, Fl. Am. Sept., p. 365, (1818).

Millers, Tolleston, Pine, Gibsons, Lake Co. (Higdon and Raddin). Lake Co. (Hill).

CLAYTONIA Gronovius, Linn., Gen. Pl., p. 339 (1737).

Claytonia Gronovius, Fl. Virg. p. (1739), Linn., Gen., p. 97 (1754).

Claytonia virginica Linn., Sp. Pl., p. 204 (1753).

Lake Maxinkuckee (H. W. Clarke), Mineral Springs (Deam), Laporte Co. (Deam) Nos. 2016 Notre Dame (Powers), 3411, 2492, Notre Dame, 402 Websters. I have found it in all the counties.

PORTULACCA Plin', XX:20.

Andrachne Theophrastus, Caus. Pl., I:10, 4, Hist., I:8, 15, 4, Dioscorides II:150, *Portulacca* Brunfels, Gerarde, Matthioli, Lobelius, Castor Durante, Tabernaemontanus, Turner, Cordus, Lonicer, Anguillara, Camerarius, Dodonaeus, Gesner, Marcellus Vergilius, Caesalpinus, Tragus, Fuchs, etc., *Portulacca* Tour., Els., p. 203 (1694), I. R. H., p. 236 (1700), Linn., Syst., (1735), Gen., p. 122 (1737), p. 204 (1754).

Portulacca sylvestris Fuchs Hist. Stirp., p. 113 (1542), p. 42, (1546), p. 63 (1549) also *Portulacca sylvestris* Tragus, Matthioli, Anguillara, Dodonaeus, Camerarius, etc., *Portulacca oleracea* var. B. Linn., Sp. Pl., p. 445 (1753), *Portulacca arvensis* Tabernaemontanus, Anguillara, Dodonaeus, Camerarius, etc., *Portulacca oleracea* var. β Linn., Sp. Pl., p. 445 (1753), *Portulacca arvensis* Tabernaemontanus *Portulacca minor* Gesner, also Camerarius, Hort. Med. p. 131 (1588).

Lake Maxinkuckee (H. W. Clarke). I have found the plant in all the counties of the region.

Portulacca grandiflora Hooker, Bot. Mag., Pl. 2885, (1829).
I have found it as an escape from gardens at Notre Dame, Ind.

Family 59. **ALSINEAE** Bartling, Ord. Nat. p. 304 (1830).

Alsinoideae A. Br., Aschers., Fl. Brand., I, p. 60 (1864).

Alsineaceae Bubani, Fl. Pyr., III, p. 22 (1901).

ALSINE Dioscorides, IV:75, Pliny, XXV:11.

Alsine Matthioli, Anguillara, Lacuna, Lonicer, Lobellius, Castor Durante, Fuchs, Dodonaeus, Tabernaemontanus, Gerarde, Thalius, Camerarius, Gesner, etc., etc., *Alsine* Tour., Els., p. 208, 1694, I. R. H., p. 242 (1700) *Alsine* Linn., Syst., (1735), Gen., p. 133 (1737), [*Alsine* and *Stellaria* Gen., p. 132 and 193 (1754)].

Alsine media Fuchs Hist. Stirp., p. 106 (1546).

Alsine media Dodonaeus, Hist. Pl., Ed. C. Clusius, p. 40 (1557), Camerarius Hort. Med. p. 11 (1588), C. Bauhin Pinax, p. 250 (1623), Tour., Els., p. 205 (1694), I. R. H., p. 242 (1700), *Alsine minor* Dodonaeus Pempt., p. 29 (1583), also Thalius, Sylv. Herc., p. 11 (1588), *Hippia minor* Dodonaeus Tr. Pr. Stirp. Hist., p. 150 (1553).

Lake Maxinkuckee (H. W. Clarke) 2057 Notre Dame (Powers). The plant is found throughout the whole region. It blooms the whole year round, a few sunny days in the middle of winter being sufficient to bring out the flowers.

Alsine graminea Linn., and Hesselgren, Pan Succus in Am. Acad. I, p. 248 (1751).

Stellaria graminea Linn., Sp. Pl., p. 412 (1753), *Alsine graminea* Britton, Mem. Torr. Cl. V, p. 150 (1894).

Lake Co. (Deam), Michigan City, Laporte Co., C. D. Mell.

Alsine longifolia (Muhl.) Britton, Mem. Torr. Cl., V, p. 150 (1894).

Stellaria longifolia Muhl., Willd., Enum. Hort. Berol. pp. 479 (1809).

Clarke, Ind., (Umbach. Nos. 36, 896 3433, Notre Dame, Ind. The latter found by Powers, 578 Terre Coupée (St. Joseph Co.), 11073 Benton Harbor, (Berrien Co.).

Alsine longipes (Goldie) Coville, Cotn. Nat. Nerb. IV, p. 70 (1894).

Stellaria longipes Goldie, Edinb. Phil. Jr. VI, p. 327 (1822). St. Joseph Co. (Rothert), No. 2058, Notre Dame, (Powers).

CERASTIUM Dillenius, Cat. Pl. Giss., p. 41, etc. (1718).

Cerastium Linn., (1735), Gen., p. 134 (1737), p. 199 (1754), Hort Cliff., p. 147 (1737), *Myosotis* Tour., Els., p. 210 (1694), I. R. H., p. 244 (1700); not *Myosotis* of the ancients.

Cerastium viscosum Linn., and Hesselgren, Pan Suecus, Am. Acad., II, p. 248 (1752), also Linn., Sp. Pl., p. 437 (1753).

Benton Harbor, Mich.

Cerastium vulgatum Linn., Sp. Pl., p. 627 (1762).

Lake Maxinkuckee (H. W. Clarke), Laporte Co. (Deam).
(To be continued.)

SOME COMMON BIRDS.

BY VICTOR CARPENTER.

RED-WINGED BLACKBIRD.

Agelaius phoeniceus

Blackbird Family.

Syn. Swamp blackbird.

Length. 9.50 inches.

Color. Male, velvet black, greenish tint; shoulders of crimson. Female, brownish above; beneath white streaked with dirty brown.

Song. Varied and hard to describe; common note, "concurr-ee"; mingling of, guttural creaking utterances.

Nest. Generally in low bushes; well made from reeds and lined with grasses and sedges.

Eggs. Light blue blotched or scrawled with black or dark purple; very varying.

Habitat. U. S. from coast to coast.

Specific habitat. Marshes and low ground.

Migration. March 15 to last of October.

BROWN THRASHER.

Harporhynchus rufus

Thrasher Family.

Syn. Brown thrush.

Length. 11.40 inches.

Color. Upper parts reddish brown; under parts white and spotted with brown; eyes yellow.

Song. Clear and well defined; can be heard over a third of a mile; very beautiful.

Nest. Placed on ground or a little above it; generally in hedges.
Eggs. Bluish white; thickly speckled with minute specks of reddish or cinnamon brown.

Habitat. The central states;

Specific habitat. Brush or hedge patches.

Migration. Middle of April till October.

BLUE JAY.

Cyanocitta cristata.

Crow Family.

Syn. Jay bird.

Length. 11.50 inches.

Color. Above, light purplish blue; wings and tail feathers bright blue; tail banded with black, tipped with white; light purplish blue on throat; a crescent shaped blotch of black on breast and half around neck. Female, much duller.

Song. No real song; good mimic of songs and notes of other birds. Bell-like note; many harsh notes; a loud hawk-note.

Nest. Rude, about twenty feet from ground; composed of twigs, etc., lined with roots.

Eggs. Five in number; light olive green, marked with spots of brown.

Habitat. Eastern N. America to Missouri valley.

Specific habitat. Oakgroves in settled places.

Migration. No regular migration.

Food. Tent caterpillars, other worms and insects in summer; in winter acorns and beech mast.

BARN SWALLOW.

Chelidon erythrogaster.

Length. 7 inches.

Color. Upper parts and sides of breast steel blue; throat chestnut; under parts paler; tail marked with white.

Song. Poor efforts, but composed of happy twittering.

Nest. Placed on a beam in an out building; made of mud and grasses lined with feathers.

Eggs. Six; white, with many spots.

Habitat. Central and eastern states.

Migration. April 15 to September 15.

Food. Insects taken on the wing; little if any vegetable food.

BLUE BIRD.

Sialia sialis.

Thrush Family.

Length. 7 inches.

Color. Upper parts bright blue; under parts cinnamon brown.

Song. Low earnest warble, soft and agreeable; song ceases before departure in fall.

Nest. Made in hollow tree or nesting box, of fine grasses, etc.

Eggs. Five in number. Bluish white color.

Habitat. Eastern U. S. west to Rockies.

Migration. First of March to last of October.

CATBIRD.

Galeoscoptes carolinensis

Thrasher Family.

Length. 8.50 inches.

Color. Slate; cap and tail black.

Song. Quaint attractive melody; good mimic.

Nest. In low bushes or briars in retired spots; composed of leaves, dry bark, fine roots and stems, lined with fine grasses.

Habitat. U. S. west to Rockies, north to Canada, south to Panama.

Specific Habitat. Low growth, as briars, vines, etc.

Migration. Last of April to October.

CEDAR WAXING.

Ampelis cedrorum.

Chatterer Family.

Length. 7.25 inches.

Syn. Cedar bird.

Color. Grayish brown; belly yellowish; end of tail yellow; secondaries sometimes red; black stripe through face.

Song. Few notes.

Nest. In low bush or tree three to twenty feet high; large and bulky but strong; coarse framework lined with leaves and soft root fibres.

Eggs. Five or six; color, light slate to stone, tinged with olive; blotched with dark purplish brown; length about 75. inch.

Habitat. All U. S. to Canada.

Food. Cedar berries, cherries, wild berries, insects, canker worms.

CARDINAL.

Cardinalis virginianus.

Finch Family.

Syn. Cardinal bird; redbird.

Length. 8 inches.

Color. About base of bill black; rest of plumage bright red; bill red.

Song. A clear whistle.

Nest. Four feet from ground in thick bushes; usually near running water; loose, composed of dry leaves, twigs, grape vines, etc.

Eggs. Three or four; oblong oval; white, very thickly marked with ashy brown; vary greatly in size.

Habitat. Southern states; rare farther north than Central Indiana.

CROW.

Corvus americanus.

Crow Family.

Length. 19.30 inches.

Color. Jet black; glossy.

Nest. In tall trees; formed of very coarse sticks, bark, etc.; no lining.

Eggs. Vary greatly in color; common, light green scattered with blotches of dark brown, purplish cast; 1.50 inches long.

Habitat. U. S. from Atlantic to Pacific.

Food. Grasshoppers, beetles, cut worms, etc.; corn to a small extent.

MOURNING DOVE.

Zonaidura macroura.

Pigeon Family.

Syn. Carolina dove.

Length. 12 inches.

Color. Upper parts olive brown; breast with a pinkish tinge; belly buff; tail tipped with white.

Song. None. A sad note only.

Nest. Platform shaped; very rude; of twigs, etc. on lower branch of a tree.

Eggs. Two, white; nearly equal at both ends, about 1.25 inches long.

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JULY, 1914.

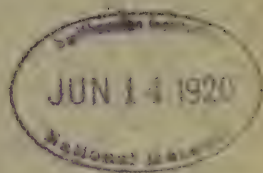
NO. 10.

THE AMERICAN MIDLAND NATURALIST

Devoted to Natural History, Primarily
that of the Prairie States

Published by the University of Notre Dame,
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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor



CONTENTS

Notes on Seedlings (With 7 Plates)	<i>Richard Vogt</i>	287
Notes on Our Local Plants—VII.	<i>J. A. Nieuwland</i>	289
Some Common Birds.—II	<i>Victor Carpenter</i>	298
Our Birds in the Autumn of 1913	<i>Brother Alphonsus, C. S. C.</i>	305
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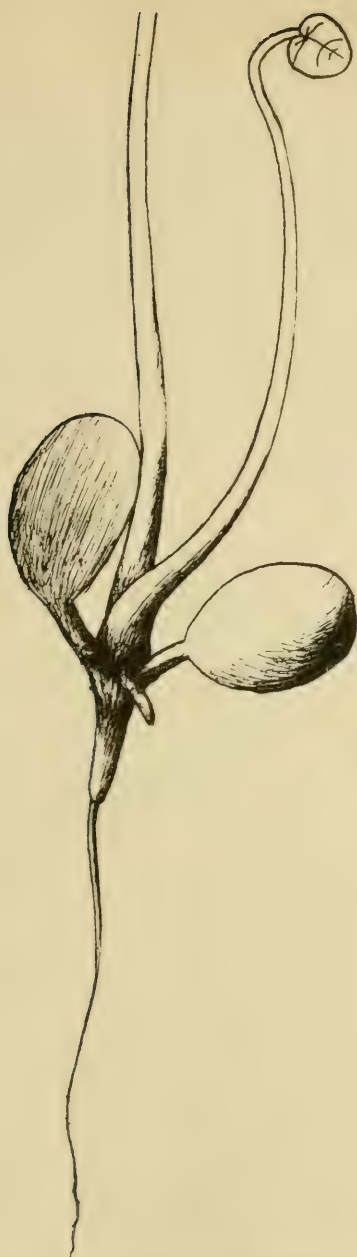


PLATE IV. VOGT on SEEDLINGS.

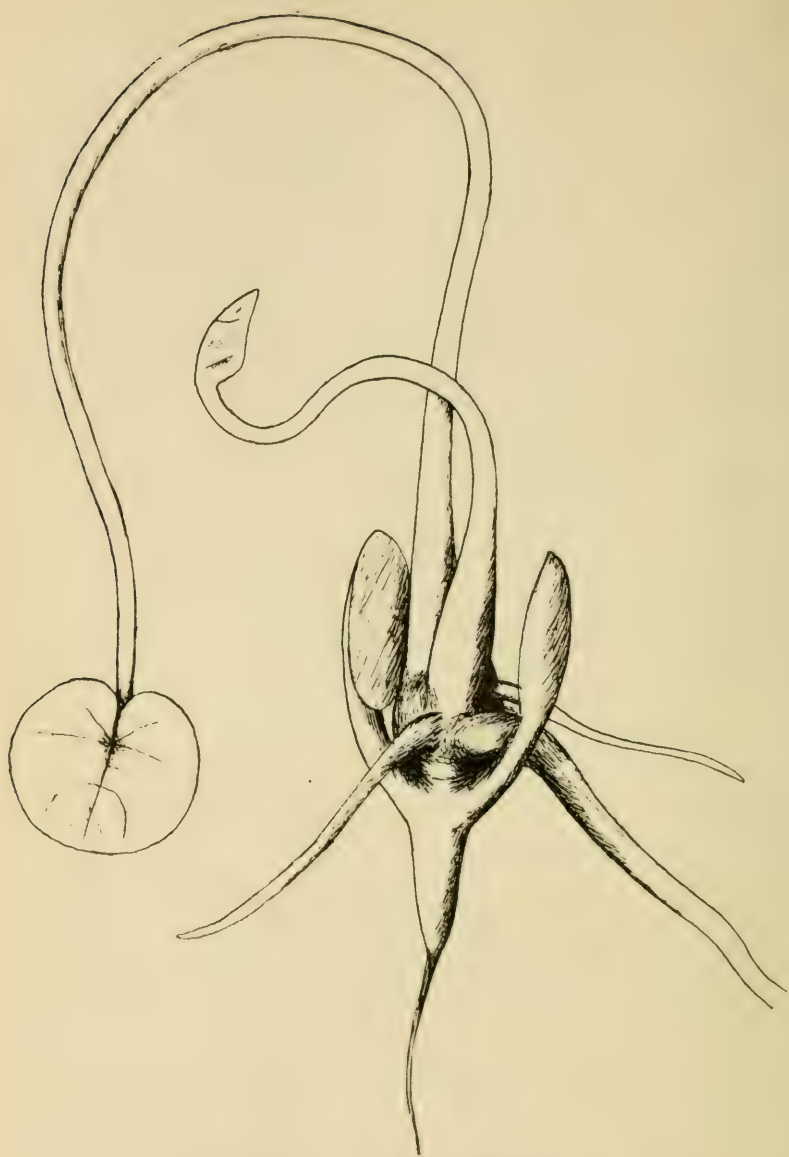


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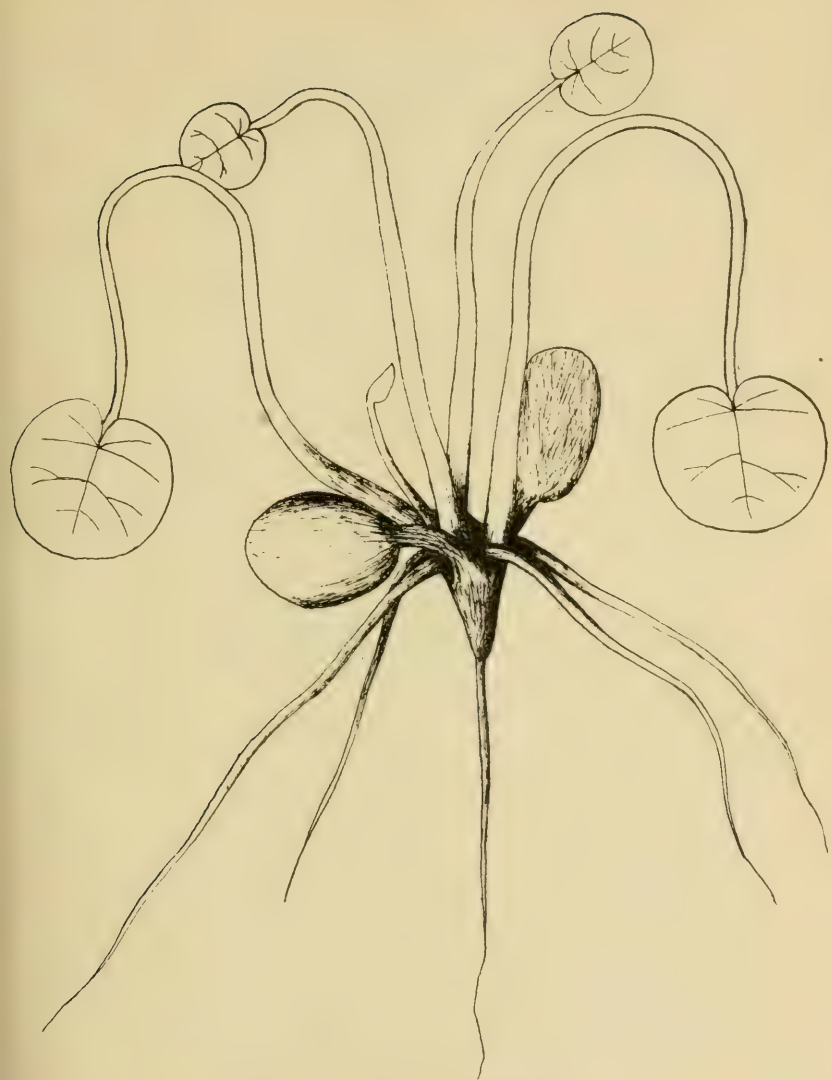


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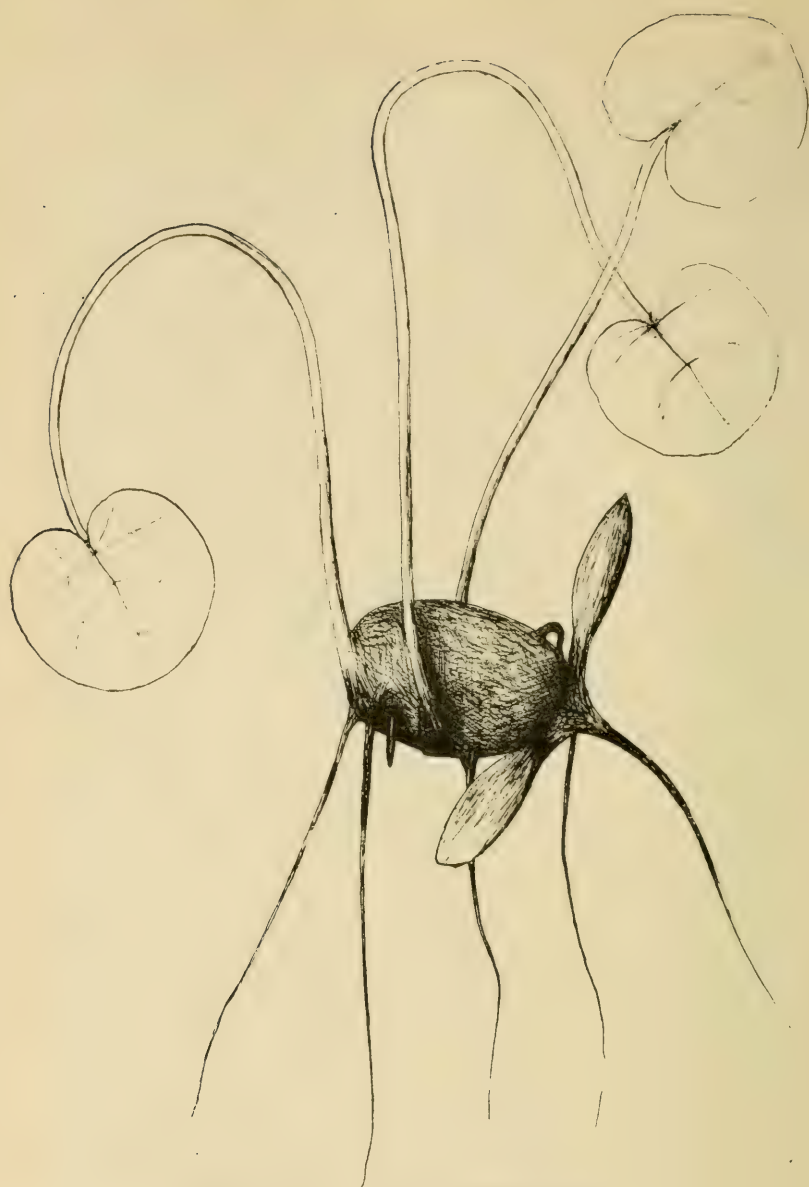


PLATE VII. VOGT on SEEDLINGS.

The American Midland Naturalist

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OF NOTRE DAME, NOTRE DAME, INDIANA.

VOL. III.

JULY, 1914.

NO. 10.

NOTES ON SEEDLINGS.

(With 7 Plates.)

BY RICHARD VOGT.

I.—CARDAMINE DOUGLASSII.

The following is a chronological table of the nomenclature of this species.

CARDAMINE (Tourn.) L. Sp. Pl. 456, 1753.

CARDAMINE DOUGLASSII Britt. Trans. N. Y. Acad. Sci. 9:8, 1889.

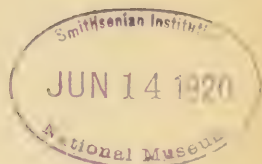
Arabis rhomboidea, var. *purpurea*. Torr. Am. Journ. Sci. 6:44, 1882.

Cardamine purpurca. Cham. & Schlecht. Linneaea 1, 1824.

Arabis Douglassii Torr. T. & G. Fl. N. A. 1:83, 1838 as a synonym.

During the past spring the young plants were closely watched with the view of determining which part of the seedling formed the well-known tuber of the mature plant. The development of the seedling takes place as follows.

The cotyledons are hypogeal and remain for some time enveloped in the seed coat. The hypocotyl is short and of a conical shape terminating below in the primary root (Plate IV). The epicotyl in very young seedlings is short, erect and of small diameter. It gives rise at first to a single cordate long petioled primary leaf and later to form one to four secondary leaves arising in close proximity to the first one. When the second leaf appears the epicotyl begins to increase in diameter and secondary roots are given off, usually from the axils of the cotyledons but occasionally from other points on the epicotyl (Plates IV. and V). The epicotyl itself continues to increase markedly in thickness until it becomes a globose tuber and at the same time it inclines



from its original upright position towards a horizontal one (Plates VI. to VIII). The primary root soon decays leaving a scar at the base of the hypocotyl. The cotyledons also drop off and about the beginning of June, the leaves wither, there remaining only the hypocotyl and the tuberous epicotyl with its secondary roots. At the beginning of the second season a slender rootstock is produced from the apex of the tuberous epicotyl, and later a second tuber, with its cluster of leaves is formed at the tip of this rootstock. One specimen was found which had produced such a tuber the first season (Plate VIII.); this, however, was only separated from the original tuber by a short rhizome. These facts seem to show clearly enough that the tuberous growth is produced from the epicotyl and not from the hypocotyl in part at least as is usually the case.

II.—SYNDESMON THALICTROIDES.

The following is a chronological table of the nomenclature of this species.

SYNDESMON. Hoffmg. Flora, 15: Part 2 Intell. Bl. 6:36 1832.

SYNDESMON THALICTROIDES (Linn.) Hoffmg. Flora 15: Part 2 Intell. Bl. 6, 36, 1832.

Anemone thalictroides Linn. Sp. Pl. 562, 1753.

Thalictrum anemonoides Michx. Fl. Bor. Am. 1, 322, 1803, also DC. Prod. 1, 15.

Anemonella thalictroides Spach. Hist. Veg. 7:260.

Thalictrum caule unifloro Clayton Fl. Virg. p. 43.

Ranunculus thalictri foliis grumosa radici. Bannister Cat. Stirp. Virg.

Ranunculus Nemorasus Aquilegiæ foliis, Virginiana, Asphodeli radice. Pluk. Phyt. Tab. VI., 6.

The development of the seedlings was closely observed in order to discover the origin of the tuberous roots found in the adult plant. The cotyledons are epigeal and noticeably veined. Their petioles are channelled on the inner face and the cotyledons themselves are divaricate. The epicotyl is small and usually gives rise to but one leaf the first year. The hypocotyl is rather long and bears at its lower end the primary root, which, however, soon disappears. A number of persistent secondary roots are also produced near the base of the hypocotyl (Plate IX, Fig. 1). The

hypocotyl itself soon begins to swell out, causing the epidermis to crack and finally to peel off (Plate IX, Figs. 2, 3). Thus enlarged, the hypocotyl serves as a place for food storage. The second year two or three leaves are sent up from the epicotyl, and from the base of each petiole these arises usually a secondary root. These become enlarged until they resemble the swollen hypocotyl in appearance and serve like it for food storage. (Plate X). Commonly each leaf that arises thereafter produces such a root and the result in old plants is a considerable cluster of such tuberous roots. This shows then that the first tuber arises from the hypocotyl and the others from secondary roots originating from the base of the leaf petiole or just below it.

*Department of Botany,
University of Notre Dame.*

NOTES ON OUR LOCAL PLANTS.—VII.

BY J. A NIEUWLAND.

Cerastium longipedunculatum Muhl., Cat., p. 46 (1813).

Cerastium nutans Raf., Préc. Découv., p. 36 (1814).

Nos. 11146, 9149, 9132, South of South Bend, Ind., 822 North Liberty, St. Joseph Co., No. 2040. Notre Dame (Powers).

Cerastium arvense Linn., Sp. Pl., p. 438 (1753).

Nos. 2546, 11031, 11241, 11085, Notre Dame, Ind., 2443, 2039, W. of Notre Dame, (Powers), 9240, 9202, N. of Notre Dame at Webster's Station.

ARENARIA Chabreaus, Sciagraphia, (1666), also 2nd Ed., p. 550, (1677).

Arenaria Guettard, Stamp., 2, p. 281 (1747), Ruppius, Fl. Jen., (1718), p. 89 (1726), *Arenaria* Linn., Syst. (1735), Gen., p. 133 (1737), p. 193 (1754), *Euthalia* Ruprecht, Fl. Cauc., p. 220 (1869).

Arenaria serpyllifolia Linn., Sp. Pl. p. 423 (1753).

Arenaria multicaulis Linn. and Hesselgren, Pan Suecus, Am. Acad., p. 248 (1751). Probably. *Spergula multicaulis* Dillenius, Giss., p. 58 (1718), *Euthalia serpyllifolia* Ruprecht, l. c., *Arenaria breviflora* Gilib., Enum. Pl. Lti., 249, II, 155 (1781), *Alsine*

minima Dodonaeus, Pempt, 30 (1583), Lobelius, Dalechamps, etc.

Hammond and Clarke, Ind. (Higdon and Raddin), Lake Maxinkuckee, (H. W. Clarke), Michigan City, (C. D. Mell), Clarke, Ind. (Umbach). I have found it in all the counties.

Arenaria stricta Michx., Fl. Bor. Am., I, p. 274 (1803).

Lake Co., (Hill), St. Joseph Co. (Rothert), Colehour, Millers and Edgemoor (Higdon and Raddin), Pine, Lake Co., (Babcock) (Umbach), Lake Co. (Deam), Nos 3435, 1964, Notre Dame (Powers), 30, 2659, 3451, Notre Dame, 2649 Millers, Ind.

MOEHRINGIA Linn., Gen. p. 167, (1742), p. 170 (1754).

Moehringia lateriflora (Linn.) Fenzl., Verbr. Alsin., p. 18 (1833)

Arenaria lateriflora Linn., Sp. Pl., p. 423 (1753).

Lake Co. (Hill), No. 457, Notre Dame, Ind.

TISSA Adans., Fam. Pl., II., p. 507 (1763).

Buda Adans., l. c., *Lepigonum* (Fries) Wahlberg, Fl. Gothob., p. 45 (1820) *Spergularia* Presl, Pr. Fl. Cech., p. 94 (1819), Persoon, Syn., p. 509 (1805), as a subgenus, *Corion* Mitchell, Act. Nat. Cur., 208 (1748) also (1769), not *Corion* of the ancients or the older authors.

Tissa rubra (Linn.) Britton, Bull. Torr. Cl., XVI, p. 127 (1889).

Arenaria rubra Linn., Sp. Pl., p. 423 (1753), *Buda rubra* Dum., Fl. Belg., p. 110 (1827), *Spergularia rubra* Presl., l. c. p. 93.

The only place I have found this plant is on the road to Lost Lake, St. Joseph Co.

Family 60. **CARYOPHYLLEAE** B. Jussieu, Hort.

Trianon (1759), Jussieu, Gen., LXVII, and 299 (1789)

Caryophyllaceae Reichenb., Consp., p. 206 (1828).

GITHAGO Tragus, Hist. (1552), also Adanson, II, p. 255 (1763).

Agrostemma Linn., Syst., (1735), Gen., p. 135 (1737), p. 198 (1754), *Pseudomelanthium* Matthioli, Lacuna, Lonicer, Lobelius, Castor Durante, Thalius, Gerarde, *Anthemion* Dodonaeus, Hist., ed. C. Clusius, (1557), *Nigellastrum* Dodonaeus, Pempt., 2:1:17 (1583), *Lychnis* in part of numerous pre-Linnaean and many post-Linnaean authors.

Githago segetum Link, Diss. Bot. Suerin., p. 62 (1795).

Agrostemma Githago Linn., Sp. Pl., p. 435 (1753), *Agrostemma agrestis* Linn., and Hesselgren, Pan Suec., Amoen. Acad. p. 248

(1751), *Lychnis Githago* Scop., Fl. Carn., Ed. 2, p. 310 (1772), *Githago segetalis* St. Lager, Ann. Soc. Bot. Lyon., VII, p. 119 (1889), *Lychnis rustica* Herm. Barbarus, Cor., p. 50 (1530), *Lychnis agrestis* Marcellus Vergilius, Diosc., p. 416 (1529), *Lychnis segetum* C. Bauhin, Pinax, p. 204 (1623), *Lychnis arvensis* Tabernaemontanus etc., etc. *Lychnis agria* Dioscorides.

Lake Maxinkuckee (H. W. Clarke), Nos. 3481, 2026, Notre Dame, Ind. (Powers), 9303 Notre Dame, 11194 Webster's Station. Found in all the counties.

SILENE Lobelius, Obs., p. 242 (1576).

Viscago Dillenius, Hort. Eltham., p. 309 (1732), also Haller, Camerarius, etc., *Muscipula* Ruppius, Fl. Jen., p. 1000 (1726), *Silene* Linn., Syst., (1735), Gen., p. 132 (1737), p. 193 (1754), *Oncerum* Dulac, Fl. Pyr., p. 255 (1867), *Corone* Hoffmg., ex Steud. Nom., ed. II, p. 422 (1840).

Silene virginica Linn., Sp. Pl., p. 419 (1753).

Whiting, Ind., (Higdon and Raddin).

Silene latifolia (Miller) Britten and Rendle, List Br. Seed-plant sp. 5 (1907).

Cucubalus latifolius Mill. Gard. Dict., ed. 8, No. 2, (1768), Fl. Deutsch. Ed. 9, p. 64 (1869), *Silene inflata* J. E. Smith, Fl. Brit., II, p. 292 (1809).

Pine, Ind., (Umbach), Nos. 2022 Notre Dame, (Powers), 50 Granger, Ind., St. Joseph Farm near Granger, Ind., 9102 Mishawaka, St. Joseph Co., Ind.

Silene conica Linn., Sp. Pl., p. 418 (1753).

Stephensville, Berrien Co. Mich. No. 2713. As far as I am able to find this is the third time that the plant has been reported in the United States. (See Am. Mid. Nat., II, p. 264 (1912).

Silene antirrhina Linn., Sp. Pl., p. 419 (1753).

Lake Maxinkuckee (H. W. Clarke), Millers (Umbach), Nos. 588, 587½ Notre Dame, Ind., 75 Granger, Ind. Seen also in Porter, Laporte, and Berrien Cos.

Silene armeria Linn., Sp. Pl., p. 601 (1762).

Found spontaneous in several places in St. Joseph Co. together with *Hibiscus Trionum* and probably introduced with grass seed.

EVACTOMA Raf., Aut. Bot., p. 1., Cent. II, p. 23 (1815-40).

Evactoma stellata var. ***scabrella*** Nwd., Am. Mid. Nat., III, I p. 57 (1913).

Lake Maxinkuckee (H. W. Clarke) (Miss Beardsley) (Deam), Lake Co. (Hill) (Deam) Probably? Nos. 3491 Notre Dame (Powers), 2136, 10338, Notre Dame, 9699 Dune Park, Ind.

LYCHNIS Dioscorides III:114, 115.

Coronaria Linn., Syst. (1735) and *Lychnis* of the same, also *Coronaria* and *Lychnis* Linn., Hort. Cliff., p. 174 (1737), Royen Lugd., p. 449 (1740), *Lychnis* Gesner, Lobelius, Tabernaemontanus, Gararde, Castor Durante, Camerarius, Clusius, Matthioli, Dodonaeus, Breynius, Lacuna, etc. *Lychnis* Tour., Els. p. 280 (1694) I. R. H., p. 337 (1700), *Lucernula* Theodorus.

Lychnis coronaria Marcellus Vergilius, Com. Diosc., p. 416 (1529) also Herm. Barbarus, Cor., p. 50 (1530), Ruellius, Diosc., p. 275 (1546), Ruellius Nat. Stirp., p. 550 (1543) and of nearly all the pre-Linnaean authors. It is one of the earliest and commonly used binary names. Though the type of the ancient genus *Lychnis* it was excluded by Linnaeus from his *Lychnis*.

Agrostemma coronaria Linn., Sp. Pl., p. 436 (1753), *Lychnis Coronaria* Desr. in Lam., Encycl. III, p. 643 (1789), *Coronaria tomentosa* A. Br. Fl. XXVI, p. 368 (1843). As the name is a literal translation of the *Lychnis stephanomatike* Dioscorides Λυχνίς στεφανωματική the second part of the name is incorrectly written with a capital letter, as if it were an old reduced pre-Linnaean genus.

No. 9331 Notre Dame, Ind.

SAPONARIA Tragus, ex Brunfels, Herb. Viv. Ic., II, p. 193 (1530).

Saponaria Lacuna, Gesner, Dodonaeus, Lobelius, Caesalpinus, Tabernaemontanus, Camerarius, Gerarde, etc. *Struthion* Fuchs, Lonicer, Thalius, Cusa, *Lychnis* Sp. Tour., *Spergula* Sp. Dillenius.

Saponaria vulgaris Camerarius, Hort. Med., p. 153 (1588).

Saponaria major Cusa, Dalechamps, J. Bauhin. *Saponaria Gypsophyton* Linn., and Hesselgr. Pap. Suecus, Am. Acad., III, p. 247 (1751), *Saponaria officinalis* Linn., Sp. Pl., p. 408 (1753).

Lake Maxinkuckee (H. W. Clarke), Laporte Co. (Deam), No. 10467 Bertrand, Mich., I have found it in every county in the region.

VACCARIA Dodonaeus, Pempt, 1:4:20, (1583).

Vaccaria Gesner, Hort. Ger., Cusa, Tabernaemontanus,

Glastum Anguillara, *Thamecnemum* V. Cordus, Hist. *Vaccaria* Medicus, Phil. Bot., I, p. 96 (1781).

Vaccaria vulgaris Host, Fl. Aust. I, p. 518 (1827).

Saponaria Vaccaria Linn., Sp. Pl., p. 409 (1753).

Whiting, Ind., Lake Co., (Hill), Lake Maxinkuckee (H. W. Clarke). Nos. 2735, 11285, along the Grand Trunk R. R., Olivers, west of South Bend.

DIOSANTHOS Theophrastus, Hist., VI:1, 6.

Diosanthos St. Lager, Ann. Soc. Bot. Lyon., VII, p. 87 (1880) Bubani, Fl. Pyr., III, p. 89 (1901), *Caryophyllus* C. Bauhin, Matthioli, Camerarius, Castor Durante, Lobelius, Gerarde, Cusa, Lobelius, Clusius, Tabernaemontanus, etc., *Armerius* Clusius Pannon., Hist., *Armeria* Gerarde, Lobelius, *Thyrsis* Renealm, *Caryophyllea* Tragus, Matthioli, Castor Durante, Cusa, *Caryophyllum* Cuba, Hort. Sanitatis, (1491), *Dianthus* Linn., Syst., (1735), Gen., p. 130 (1737), p. 191 (1754), *Caryophyllus* Tour., Els., p. 279 (1694), I. R. H., p. 174 (1700), *Betonica* Fuchs, *Cantabrica* Turner, *Tunica* Lonicer, Ludwig-Boehmer, Dillenius, etc., *Superba* Tragus, Lonicer, Thalius, Camerarius, etc. *Cyclinanthus* Dulac, Fl. Batav, 12, 921, Fl. Pyr., p. 290, (1867).

Diosanthos barbatus St. Lager, l. c., Bubani, Fl. Pyr., III, p. 93, (1901).

Dianthus barbatus Linn., Sp. Pl. p. 409 (1753).

Cyclinanthus barbatus Dulac, l. c.

Found escaped in a number of places around Notre Dame and persisting and sowing its seeds.

Diosanthos armerium St. Lager, l. c.

Dianthus Armeria Linn., Sp. Pl., p. 410 (1753), *Cyclinanthus maculatus* Dulac, l. c., p. 261.

No. 501 Notre Dame, Ind.

Diosanthos Theophrasti Anguillara, Semp., (1561).

Dianthus plumarius Linn., Sp. Pl., p. 411 (1753), *Caryophyllus minor* Dodonaeus, *Superba recentiorum* Lobelius, *Vetonica sylvestris* Gesner, Hist.

This plant though not perhaps strictly an escape persists a long time and spreads considerably. I have found it quite abundantly along the interurban railway to St. Joseph, Mich, at Roselawn.

ORDER 25. RANALES.

Engler in Eng. and Prantl, Pflanzfm. Nachtr. p. 347 (1897).

Family 61. **CERATOPHYLLEAE** DC. Prod., III,
p. 73 (1828).

Ceratophyllaceae A. Gray, Ann. Lyc. N. Y., IV, p. 41 (1857).

DICHOTOPHYLLUM Dillenius, Nov. Gen., p. 91 (1719).

Ceratophyllum Linn., Syst. (1735), Gen. p. 290 (1737), p. 428 (1754). *Dichotophyllum* Moench, Methodus Plant. Hort. Bot. Marb., p. 345 (1794), *Hydroceratophyllum* Vaillant, Act. Ac. R. Sc. Par., p. 16 (1719). *Ceratophyllon* Vaillant, Bot. Par., p. 22 (1723), p. 32-33 (1727), *Hydroceratophyllum* Bot. Par., p. 105 (1727), also *Hydroceratum* Vaillant, l. c. [This author seems to have changed his names for this plant rather often and once at least with good reason; for his *Hydroceratophyllum* is impossible as a name being composed of six syllables. He even made the first binary name under the genus as *Hydroceratum laevius* Bot. Par., l. c. (1727). This is the *Ceratophyllum submersum* Linn., Sp. Pl., p. 1409 (1763)].

Dichotophyllum demersum (Linn.) Moench, Meth., p. 345 (1794).

Ceratophyllum demersum Linn., Sp. Pl. p. 992 (1753). *Ceratophyllum aquaticum* Linn., and Hesselgr., Pan Suec., Am. Acad., II, p. 259 (1751).

Lake Co. (Higdon and Raddin), Lake Maxinkuckee (H. W. Clarke). Found also in Laporte, Porter, St. Joseph, Berrien, and Van Buren Cos.

Family 62. **HYDROPELTIDEAE** Dum., Comm. Bot., p.
64 (1823).

Cabombeae Bartling Ord. Nat., p. 86 (1830), *Cabombaceae* A. Gray, Ann. Lyc. N. Y., IV, p. 46 (1836), *Hydropeltideae* Dum., Anal. Gen., Pl., p. 53 (1829).

BRASENIA Schreber, Gen. Pl., p. 372 (1779).

Hydropeltis Michx., Fl. Bor. Am., p. 323 (1803).

Brasenia Schreberi Gmelin, Syst. Veg., I, p. 853 (1796).

Hydropeltis purpurea Michx., Fl. Bor. Am., I, p. 324 (1803), *Brasenia peltata* Pursh, Fl. Am. Sept., p. 389 (1814), *Brasenia*

purpurea Casp., in Eng. and Prantl, Nat. Pflanzenf., III, 2, p. 6 (1890), *Brasenia Nymphaeoides*.

Marshall Co. (Blatchley), Laporte Co. (Barnes), Pine Station Lake Co. (Bastin, Umbach). Hudson Lake, Laporte Co., Bankson Lake Berrien Co.

Family 63. **NYMPHAEAE** Salisbury, Koenig and Sims, Ann. Bot., I, p. 70 (1806).

Nymphaeaceae DC., Prop. Med., Ed. 2, p. 119 (1816), also Dum. Comm. Bot., p. 64 (1823).

NYMPHONA Marcellus Vergilius, Comm. Diosc., p. 440, (1529).

*Nuphar** Sibth. and Smith, Fl. Graec. Prod., I, p. 391 (1806), *Nymphosanthos* Rich., Anal. Fr., p. 68 (1811) ex Endlich. Gen., *Nymphosanthus* Rich., Ann. Mus. Par., XVII, p. 230 (1817), *Nenuphar* Matthioli, Camerarius, Hayne ex Endlicher, Gen. This name was applied rather promiscuously to both the White and the Yellow Water Lilies both by authors before and after these authors. The name *Blephara* Dioscorides was not the name of the plant but of its flower.

Nymphona advena (Soland.)

Nymphaea advena Soland., Ait. Hort. Kew., II, p. 226 (1789), *Nuphar advena* R. Br., Ait. Hort. Kew., ed. 2, III, p. 295 (1811).

Lake Co. (Deam), Laporte Co. (Barnes), Lost Lake, Marshall Co. (Paul Batsch), Lake Maxinkuckee (H. W. Clarke), Nos. 9324 Notre Dame, Ind., 11269 Rum Village south of South Bend.

NYMPHAEA Dioscorides, III:148. Theophrastus, IX:13, Pliny XXV:7.

Nymphaea of all the pre-Linnaean and post-Linnaean authors except Boerhaave, Ludwig, Salisbury. *Nenuphar* Brunfels, Cas-

* The type of the genus *Nymphaea* of both Dioscorides who applied the name first, as well therefore of Linnaeus who may be presumed to use the name after him for an aggregate, was in the same sense typically *Nymphaea alba*. Linnaeus himself designated no types, but he himself tells us that should anyone see fit to break up his genera the name should be left to the official one or type of the name. (Linn., Phil. Bot., p. 197 (1751, 1755) Dioscorides mentions the yellow water lily only as *Νυμφαία ἕτερα* a second one, the common or white flowered one therefore being the typical one. This was the common opinion of all the older phytographers and prevailed until a few years ago, Boerhaave, Ludwig, Salisbury of the few exceptions to the contrary.

talia Salisbury, König and Sims, Ann. Bot., II, p. 71 (1805), also Parad. Londin., p. 14, 68 (1895), *Leuconymphaea* Ludw., Def. Gen., p. 69 (1737), *Leuconymphaea* Boerhaave, Ind. Alt. Pl., p. 281 (1727) (1720), *Nymphaea* Tour., Fls., p. 227 (1694), I. R. H., p. 260 (1700), *Nymphaea* Linn, Syst., (1735), Gen. p. 149 (1737), p. 227 (1754).

Nymphaea odorata Dryand. in Ait., Hort. Kew., II, p. 227 (1789).

Castalia odorata (Dryand.) Woodv. and Wood. Ree's Cyc. VI, 1, (1806). *Castalia pudica* Salisb. in König and Sims Ann. Bot., II, p. 72 (1805). *Leuconymphaea odorata* (Dryand.) MacM., Met., Minn. p. 228 (1892).

Laporte Co. (Barnes), Berry Lake, Ind. (Higdon and Raddin), No. 11268 South of South Bend, Ind.

Nymphaea tuberosa Paine, Cat. Pl. Oneida Co., N. Y. p. 132 (1865).

Castalia tuberosa (Paine) Greene, Bull. Torr. Club, XV, p. 84 (1888). *Leuconymphaea reniformis* (DC.) MacM. l. c. *Nymphaea maculata* Raf. Med. Bot., p. 45 (1830). (?)

St. Joseph Co. (Rothert), Lake Co. (Higdon and Raddin), Nos. 3808 Notre Dame, 9654 Chain Lakes.

Family 64. **NELUMBONEAE** Bart. Ord. Nat., p. 89 (1830), DC., Syst., p. 43, Prod., p. 113 (1824).

Nelumbonaceae Lindley, Nat. Syst. Ed. 2, p. 13 (1836).

NELUMBO Tour., I. R. H., p. 261 (1700).

Nelumbo Adans., Fam., II, p. 76 (1763), *Nelumbium* Jussieu, Gen., p. 68 (1789), *Cyamus* Smith, Exot. Bot., I, p. 59 (1804-5). *Tamara* Rheede, Hort. Ind. Mal., II, p. 61, t. 31 (1679) Roxb., Steud. Nom., II, II, p. 661 (1841).

Nelumbo lutea (Willd.) Pers., Syn. Pl., I, p. 92 (1805).

Nelumbium luteum Willd., Sp. Pl., II, p. 1259 (1799).

Wolf Lake, Lake Co., Ind. (Babcock), Clarke, Ind. (Umbach), Kalamazoo Co. Mich. (State Cat.)

Family 65. **MAGNOLIACEAE** J. St. Hillaire, Exp. Fam., II, p. 74 (1805).

TULIPIFERA P. Hermann, Lugd., p. 612 (1686).

Tulipifera Ray, Hist., p. 1798 (1688), Plunkett, Phyt.,

t. 117, 5 (1691), Catesby, Car., 48, (1731-43), Boerhaave, Index Alt., II, p. 262 (1723) (1727). *Magnolia* Linn., Syst. (1735), Gen., p. 162 (1737), *Liriodendron* Linn., Hort. Cliff., p. 223 (1737), Gen. 254 (1742), p. 239 (1754). *Liriodendrum* Moench, Meth, p. 222 (1794), Gron. Fl. Virg. p. 60 (1739), Linn., Corol. 9 (1737), *Tulipifera* Miller, Gard. Dict. VI, (1752), I, (1737).

Tulipifera Liriodendron P. Miller, Gard. Dict., (1768).

Liriodendron Tulipifera Linn., Sp. Pl., p. 535 (1753).

Lake Maxinkuckee (H. W. Clarke), Whiting, Ind. (Hill), Laporte Co. (Deam). I have found the tree in Berrien, Van Buren, St. Joseph, Laporte, Porter, and Marshall Cos.

KOBUS Kaempfer, Amoen. Exot., p. 845 (1712).

Kobus Salisbury, Parad. Lond., t. 87 (1807), *Magnolia* Dillenius Catesby, Car., 2, p. 61 (1732-43), also 2nd ed. p. 61, t. 61, (1750), Hort. Eltham., p. 207 (1732), Linn., Syst. (1735) Gen. p. 162 (1737), p. 140 (1754), Sp. Pl., p. 535 (1753), not, *Magnolia* Plumier, Nov. Pl. Am. Gen., p. 37, t. 7, (1703) = *Talauma* Jussieu, Gen., p. 281 (1789). *Yulania* Spach, Hist. Nat. Veg., VII, p. 462, inclusive to his *Magnolia* (p. 468) and *Tulipastrum* (p. 481) (1839). *Tulipifera* P. Miller, Gard. Dict., I ed. (1737).

Kobus acuminata (Linn.)

Magnolia acuminata Linn., Sp. Pl., p. 756 (1763).

Magnolia virginiana var. *acuminata* Linn., Sp. Pl., p. 536 (1753).

I have seen this tree growing in several places in the neighboring city of South Bend. The plant though undoubtedly cultivated in these places is hardy and produces flower and abundant fruit every year. The limits of its northern distribution ranged further early in the century than now. [*Kobus* (*Magnolia*) *tripetala* stands the climate of N. Indiana and has bloomed some seasons at Notre Dame.]

Family 66. **ANONACEAE** Anal. Fruit., p. 87 (1808).

ASIMINA Adanson, Fam., II, p. 365 (1763).

Asimina triloba (Linn.) Dunal, Mon. Anon. p. 83 (1717).

Anona triloba Linn. Sp. Pl., p. 537 (1753).

Laporte Co. (Deam), Porter Co. (Deam), Lake Maxinkuckee (H. W. Clarke). Nos. 2172, 2147 Notre Dame, Ind. 511, 9516, Rum Village, south of South Bend, Ind.

(To be continued.)

SOME COMMON BIRES.—II.

BY VICTOR CARPENTER

RUBY-THROATED HUMMINGBIRD.

Trochilus colubris.

Hummingbird family.

Length, 3.25 inches.

Color. Male, green above; ruby throat; sides greenish; tail brownish violet. Female, no red on throat.

Song. None; no note except a sharp cry when disturbed.

Nest. One and one-fourth inches in width; one inch deep; made of fine vegetable fibers and lichens.

Eggs. Pure dull white color; about one half inch long.

Habitat. Eastern North America.

Specific habitat. Gardens and flower beds.

Food. Mainly insects; some nectar.

Migration. May 25 to September 25.

KINGBIRD.

Tyrannus carolinensis.

Flycatcher family.

Syn. Beebird; bee martin.

Length. 8.50 inches.

Color. Above dark bluish gray; top and sides of head dark blue-black; crest on head whitish; lower parts white tinged on throat with ash; wings dark brown edged with paler.

Song. None. Only a sharp twittering.

Food. Almost exclusively insects taken on the wing.

Nest. In upper branch of isolated tree; large, broad and strong although made of coarse rude materials; fine lining.

Eggs. Five; vary in size; white spotted with purplish brown.

Habitat. Eastern U. S. to Rockies.

Specific habitat. Orchards and groves near habitations.

Migration. May 1 to September 1.

KINGFISHER.

Ceryle alcyon.

Kingfisher family.

Length. 12 inches.

Color. Head with long crest; above ashy metallic blue; beneath pure white; band across breast; tail marked with white.
Song. None; loud harsh cry only.
Food. Nearly all fish.
Nest. In deep holes in banks near water.
Eggs. Six; laid on bare sand; clear crystal white, nearly round.
Habitat. All United States.
Specific habitat. Banks of streams.
Migration. March 20 to October 20.

MEADOW LARK.

Sturnella magna.

Oriole family.
Syn. Field lark.
Length. 10.5 inches.
Color. Dark brown above; wings and tail dark brown stripes; beneath yellow; sides reddish brown; female smaller and duller.
Song. Beautifully sweet; no variety; some call notes while not unpleasant mar the song.
Food. The larger per cent insects.
Nest. Always on ground hidden in tall grass.
Eggs. Vary in size and markings; white with brown spots; shape oval; nearly equal at both ends.
Habitat. Eastern United States.
Specific Habitat. Old fields and meadows; never woods.

PURPLE MARTIN.

Progne subis.

Swallow family.
Length. 7.5 inches.
Color. General steel blue shiny; tail dull black; under wings white.
Song. None. Not unpleasant twitters.
Nest. Formally in hollow trees; now in nesting boxes or towers; loose; fine dry leaves, straw, etc.; lined with feathers.
Eggs. Uniform creamy white.
Food. Very harmful insects.
Habitat. All United States.
Specific habitat. Near habitations.
Migration. May 1 to August 25.

ROBIN.

Merula migratorius.

Thrush family.

Length. 9.75 inches.

Color. Above greenish gray; head black; throat streaked black and white; under parts chestnut brown; wings and tail dark brown.

Song. Familiar to everyone; simple yet pleasing.

Food. Insects and berries.

Nest. Generally in orchards; apple trees favorite nesting place; about ten feet from ground; large, formed of straw, leaves, etc. and mud; lined with root fibers.

Eggs. Five, rarely six; greenish blue.

Habitat. All North America.

Specific habitat. Orchards, lawns.

Migration. March 10 to November 25.

SPARROW, SONG.

Melospiza melodia.

Finch family.

Length. 6.5 inches.

Color. Upper, brown, dark brown and gray; crown brown with stripe of gray; under parts white; sides streaked with brown.

Song. Noted; conspicuous; varied; constant.

Food. Destructive insects, canker worm, etc.

Nest. Generally on ground; sometimes two or three feet in bushes; well made; stout; lined with basket of grasses.

Eggs. Five; clay white; uniformly spotted with blotches of rust brown.

Habitat. Eastern United States to western plains.

Specific habitat. Cultivated places; edges of woods; meadows; low grounds.

Migration. March 10 to November 10.

SPARROW, FIELD.

Spizella pusilla.

Finch family.

Length. 5.50 inches.

Color. Crown rufous red; back similar, slightly ashy; beneath white with yellow tinge; tail feathers edged with white.

Song. Cheery; little variety; sometimes low.

Food. Insects; noxious weed seeds.

Nest. On ground in vines; on high ground; loosely made of grasses, sedges, etc.; lined with rootlets.

Eggs. Five; white clay marked with brown; vary greatly in size.

Habitat. United States west to Missouri.

Specific habitat. Uncultivated fields; roadsides.

Migration. March 30 to November 1.

NUTHATCH, WHITE-BREADED:

Sitta carolinensis.

Titmouse family.

Length. 6 inches.

Color. Above ashy blue; head and neck black; beneath white; under tail brown.

Song. None; sharp twitter only.

Food. Insects obtained from beneath the bark of trees.

Nest. In cavities in old trees.

Eggs. White with rose tint; marked with reddish brown.

Habitat. United States west to Missouri.

Specific habitat. Open woods.

Migration. April, May and June (nesting season).

ORIOLE, BALTIMORE.

Icterus galbula.

Oriole family.

Syn. Golden Robin, Hang-nest.

Length. 9;50 inches.

Color. Head and upper parts back; tail black; under parts orange; female less brilliant, black replaced with brownish yellow, yellow on throat; young dull orange beneath, above olive, tail of orange cast.

Song. Of endless variety; each individual varies.

Food. Insects mostly; canker worms and tent caterpillars.

Nest. Pendant; of very strong materials; high out of reach.

Eggs. Five in number; white, roseate; marked with spots, blotches and waves of purplish brown.

Habitat. U. S. from Atlantic to Missouri.

Specific habitat. Near habitations.

Migration. May 1 to September 10.

ORIOLE, ORCHARD.

Icterus spurius.

Oriole family.

Length. 9 inches.

Color. Head, wings and back black; under parts chestnut; female olive above; greenish yellow beneath; two white bands on wings.

Song. Hurried and energetic; rapid, harmonious, sweet; not so full and rich as the Baltimore's, although very agreeable.

Food. Almost exclusively insects; no accusations of fruit eating; general favorite.

Nest. Like Baltimore oriole's; not so deep.

Eggs. Pale bluish white, blotched with pale purple and brown.

Habitat. U. S. from Atlantic to Missouri.

Specific habitat. Generally orchards near dwellings.

Migration. May 5 to August 15.

BRONZED GRACKLE.

Quiscalus aeneus.

Oriole family.

Syn. Crow blackbird.

Length. 12.5 inches.

Color. General glossy black; violet; purple head; steel blue, and green hues.

Song. None; harsh grating note.

Food. Mainly insects.

Nest. Situation varies, sometimes in low bushes, more often in evergreen trees.

Eggs. Four in number; great variations in ground color, vary from light green to deep brown; dashed with dark brown; over an inch long.

Habitat. Eastern U. S.

Specific habitat. Near dwellings; often in cities.

Migration. March 10 to October 20.

SPARROW, CHIPPING.

Spizella socialis.

Finch family.

Length. 5.75 inches.

Color. Back and sides of neck and head ashy; crown chestnut; forehead black; under parts whitish tinged with ashy.

Song. None. Monotonous chirp only.

Food. Mostly animal food.

Nest. In trees or bushes; of rude branches; lined with hair.

Eggs. Five; vary in size; blue green, lightly spotted with purple and dark brown.

Habitat. Eastern North America.

Specific habitat. Near habitations.

Migration. April 15 to October 1.

VIREO, YELLOW-THROATED.

Vireo family.

Length. 5.75 inches.

Color. Head and neck above, bright olive green; lower back ashy; wings and tail brown; under parts of yellow and white.

Song. Varied; sweet; deliberate.

Food. Mainly insects; some berries.

Nest. Pendant; about ten feet from ground; well made.

Eggs. White, marked with blotches of dark brown.

Habitat. Eastern U. S.

Specific habitat. Thick woods.

Migration. May 10 to September 25.

WOODPECKER, RED-HEADED.

Melanerpes erythrocephalus.

Woodpecker family.

Length. 9.75 inches.

Color. Head and neck red; little black on upper breast; back and tail black; under parts and band on wing white.

Song. None. Harsh, disagreeable notes only.

Food. Nearly all insects.

Nest. In tree or posts.

Eggs. Six in number; pure white.

Habitat. U. S. to Rockies.

Specific habitat. Open woods and groves.

Migration April 1 to October 15.

THRUSH, WOOD.

Turdus mustelinus.

Thrush family.

Length. 8 inches.

Color. Above, cinnamon brown; top of head redder; under parts clear white, sometimes buff on breast; thickly marked with spots of black.

Song. Very beautiful; of great sweetness and power.

Food. Insects, berries, acorns, etc.

Nest. Placed six or eight feet from ground in tree; made of firm decayed leaves, strengthened with twigs; lined with fine roots and grasses.

Eggs. Four; deep blue, sometimes with yellow tint.

Habitat. U. S. east of Missouri plains.

Specific habitat. Thick woods; roadsides.

Migration. April 20 to October 20.

WARBLER, YELLOW.

Dendroica aestiva.

Warbler family.

Syn. Summer yellow bird; wild canary.

Length. 5.25 inches.

Color. Upper parts bright yellow; under parts streaked with brown; female duller; young, olive yellow.

Song. Pleasing though simple.

Food. Insects.

Nest. In bushes or briars three or four feet from ground; neat, skillful, strong; made of stems, bark, etc.; lined with grasses, feathers and hair.

Eggs. Five; light green, spotted with brown and lilac.

Habitat. Entire United States.

Specific habitat. Roadside hedges and bushes.

Migration. May 1 to August 1.

WREN, HOUSE.

Troglodytes aedon.

Wren family.

Syn. Wood wren.

Length. 5 inches.

Color. Above reddish brown darker on head, barred with dusky; below pale white, tinged with brown on breast.

Song. Loud, clear and bubbling.

Food. Entirely insects.

Nest. In nestling boxes; lined with fur and feathers.

Eggs. Seven or nine; white, thickly covered with reddish brown.

Habitat. Atlantic to Missouri.

Specific Habitat. Gardens and orchards.

Migrations. April 20 to September 20.

OUR BIRDS IN THE AUTUMN OF 1913.

BY BROTHER ALPHONSUS, C. S. C.

The autumn of 1913 shows a larger number of species as well as more records for many of them than any previous autumn. Seventy-five species were found during the month of September alone, which was ten less than the entire number seen during the season.

In September the Bluebird shows 6 records, with one long interval of 15 days; in October there are 12 records, with the longest interval 8 days. As in most other seasons of the year, so in autumn the Bluebird can not be said to be a very common species.

The Meadowlark was recorded 6 times in September, having as the longest interval 7 days; in October there were 21 observations, with no interval longer than 2 days; in November there was one record, on the 4th—5 days after the last record in October.

The Cowbird was recorded 11 times in September, with the longest interval between the 8th and 18th—9 days; in October 5 records were made, with an interval of 4 days and no observations after the 15th. Between the last record in September and the first in October there were 13 days.

The Kingfisher was found on 4 days in September, the longest interval being 6 days; in October it was observed once, on the 19th—21 days after the last record in September; in November the only observation was on the 13th or 22 days after the record in October.

The House Wren was observed 4 times in September, with a long interval of 15 days between the 12th and 27th; in October the species was seen twice, with an interval of 9 days. These long intervals were probably due to the fact that it is very difficult to find this wren in autumn.

In September the Swift was seen 15 times, with 3 days as the longest interval, no record having been made for autumn after the 23rd., which is unusual for this species, whose time of migration is ordinarily early in October.

Like the Swift, the Yellow-billed Cuckoo usually departs the first week in October, but this year the species was recorded last on the 23rd of September. There were 11 observations for the month, with no interval longer than 3 days.

The Brown Thrasher had 18 records in September, with the greatest interval, 5 days; in October it was observed on 4 days, one interval being 3 days and the other 2 days. The 22 records for the two months were considerably larger than those of any former autumn.

The Hermit Thrush shows 10 records for September with two intervals of 8 days and another of 1 day. Between the last record in September and the first in October there were 4 days. There were 9 observations in October, with several short intervals and a long one of 12 days—between the 17th and the 30th.

The five species that had the greatest number of records during autumn were: Red-headed Woodpecker, White-breasted Nuthatch, Blue Jay, Crow and Song Sparrow. The number of records for each species was as follows: Song Sparrow, 58; Crow, 60; Blue Jay, 74; White-breasted Nuthatch, 76; Red-headed Woodpecker, 84. The most remarkable of these records were those of the Red-headed Woodpecker, which was not found only on 7 days, and which, although not hitherto a winter species, exceeded the number of records of any other winter species.

Species not seen in September were: Towhee, Vesper Sparrow, Red-winged Blackbird, Orchard Oriole, Alder Flycatcher, Spotted Sandpiper, Barn Swallow, Greater Yellowlegs, Purple Martin, Chickadee, Bobwhite, Cardinal, Long-billed Marsh Wren, Black-poll Warbler. In May the Black-poll Warbler is fairly common, but in autumn the species has not been recorded at all by the writer. The Spotted Sandpiper is seldom seen after the last week in August. After Aug. 22 there were but three records of the Red-winged Blackbird.

Species not seen in October: Chimney Swift, Yellow-billed Cuckoo, Cardinal, Bobwhite, Purple Finch. Probably the rarest species that is found in this locality is the Purple Finch, which I have not seen since April 9, 1911, and never in autumn. The Bobwhite is very seldom found in any season of the year. The Cardinal was observed only twice this year, once in spring and summer.

Species not seen in November: Bluebird, Bronzed Grackle, Fox Sparrow, Northern Shrike. It is difficult to find Fox Sparrows at any time during their stay in spring or fall, and consequently this species may be easily overlooked. The Bronzed Grackle, strange to say, was absent in November and reappeared in

December. The Bluebird often makes its last visit to us in October. Like other northern species, the Shrike is a wanderer, which may choose other feeding grounds than ours.

Species seen for the first time were: Lark Sparrow, Savanna Sparrow, Montana Junco, Virginia Rail, Connecticut Warbler. The Montana Junco was feeding with some common Snowbirds and was easily distinguished from them.

SEPTEMBER.

- | | |
|---|---|
| Crow, 2, 5, 6, 7, 9, 10, 11, 15, 16,
17, 19, 22, 24, 25, 27 to 30. | White-breasted Nuthatch, 1 to
12, 14, 16, 17, 19, 21, 22,
23, 27, 30. |
| Blue Jay, 1 to 8, 10 to 30. | Cedarbird, 2, 3, 5, 6 to 10. |
| Robin, 1 to 13, 15 to 20, 22, 23,
25 to 30. | Yellow-billed Cuckoo, 1, 2, 3, 5,
9, 11, 14, 15, 19, 20, 23. |
| Bluebird, 3, 4, 5, 8, 24, 28. | Red-headed Woodpecker, 1 to 30 |
| Song Sparrow, 1 to 7, 11, 12,
14 to 30. | Brown Thrasher, 1 to 6, 12, 13,
15, 17, 18, 19, 22 to 27 |
| Meadowlark, 10, 13, 21, 23, 25,
27. | Chipping Sparrow, 1, 3 to 9, 11,
13, 14, 15, 19, 20, 23, 28, 29 |
| Bronzed Grackle, 1 to 13, 15, 17
to 24, 26 to 30. | Goldfinch, 1 to 20, 23, 24, 25,
28, 29, 30. |
| Killdeer, 15, 16, 19, 21, 23, 24,
27, 28, 30. | Flicker, 1 to 11, 13, 14, 15, 17,
18, 23 to 27, 30. |
| Field Sparrow, 1, 3, 4, 5, 6, 9,
11, 12, 13, 20, 29. | Red-eyed Vireo, 1, 2. |
| Mourning Dove, 1 to 7, 9, 11,
13, 15, 17, 19, 24, 25, 27, 29, 30 | Phoebe, 4, 12, 24, 25. |
| Cowbird, 2, 3 to 6, 8, 18, 20,
22, 23. | Downy Woodpecker, 1, 5, 8,
10, 12, 13, 14, 16, 22, 24, 26, 27 |
| Kingfisher, 14, 15, 21, 22, 23, 26. | Lesser Yellowlegs, 2, 20, 21, 23. |
| House Wren, 1, 3, 6, 12, 27 | Hairy Woodpecker, 17. |
| Chimney Swift, 1 to 13, 16, 20, 23 | Hell Diver, 16, 17, 18, 23. |
| Warbling Vireo, 1 to 4, 6 to 9,
11, 13, 14. | Swamp Sparrow, 1, 4 |
| Baltimore Oriole, 1, 3. | Screech Owl, 5, 25. |
| Indigo Bird, 3. | Wood Pewee, 1 to 7, 9 to 12, 14,
16, 17, 18, 19, 22, 23, 24, 27 |
| Kingbird, 1, 2, 4, 5. | Hummingbird, 1, 5, 19 |
| Catbird, 1 to 6, 8, 15, 17, 18,
19, 22, 23, 24. | Red-shouldered Hawk, 23. |
| Crested Flycatcher, 3, 11. | Sparrow Hawk, 15, 18. |
| | Least Flycatcher, 4, 9, 13, 21,
24, 25. |

- Ovenbird, 25.
 Redstart, 1, 6, 9 to 12, 15, 17,
 23, 24, 25, 27
 Black and White Warbler, 12, 17,
 Black and White Warbler, 12,
 17, 22, 23, 26
 Black-throated Green Warbler,
 2, 6, 9 to 13, 16, 19, 21 to
 27, 29, 30
 Bay-breasted Warbler, 9, 13, 14,
 24
 Hermit Thrush, 1, 10, 11, 20
 to 24, 26, 27
 Nighthawk, 1, 2, 3, 6, 7
 Black-throated Blue Warbler, 2,
 26
 Snowbird, 4, 5, 13, 14, 20, 21,
 22, 27, 29
 Magnolia Warbler, 4, 5, 6, 9,
 11, 12, 13, 16, 18, 19, 22, 23,
 24, 26, 27, 29
 Nashville Warbler, 5, 6, 9.
 Tennessee Warbler, 5, 13, 16, 22
 Blue Gray Gnatcatcher, 5, 25
 Blue-headed Vireo, 6
 Black-billed Cuckoo, 6, 13.
 Chestnut-sided Warbler, 22
 Maryland Yellowthroat, 8, 12
 Connecticut Warbler, 9, 20, 27,
 29
 Prairie Warbler, 11, 19
 Water Thrush, 12, 14, 18, 26
 Ruby-crowned Kinglet, 20, 26
 Pine Warbler, 11 to 14, 19, 22,
 23, 24, 26, 27
 Brown Creeper, 13, 14, 21, 22, 28
 White-throated Sparrow, 15, 16,
 17, 18, 20, 26, 27, 29, 30
 Red-breasted Nuthatch, 19
 Sapsucker, 19, 20, 22, 23, 28, 29
 Sycamore Warbler, 22
 Lark Sparrow, 24, 25, 27
 Myrtle Warbler, 27, 28, 29, 30
 Yellow Palm Warbler, 27.
 Virginia Rail, 26.
 Golden-crowned Kinglet, 27, 28,
 29
 Savanna Sparrow, 27
 Wood Thrush, 29

Total number of species seen in September, 75.

OCTOBER.

- Crow, 1, 3, 4, 6, 7, 8, 9, 12, 13
 to 16, 18, 19, 20, 22 to 31.
 Blue Jay, 1, 3, 4, 6, 7, 8 to 20,
 22, 24, 25, 27 to 31
 Robin, 3, 4, 6, 8, 22, 24, 26,
 29, 31
 Song Sparrow, 1 to 16, 18, 19,
 21, 23 to 26, 28 to 31
 Meadowlark, 1, 3, 4, 6, 7, 8, 9,
 11 to 16, 18, 19, 22 to 26, 29
 Bronzed Grackle, 1, 3, 4, 6 to
 16, 19, 24.
 Killdeer, 2, 3, 4, 6, 8, 11, 14,
 18, 21, 22 to 30
 Towhee, 3, 4, 6, 7, 8, 10, 13
 to 19, 21 to 27
 Field Sparrow, 1 to 4, 6 to 19,
 21 to 24, 26
 Red-winged Blackbird, 8, 19
 Mourning Dove, 4, 8.
 Cowbird, 7, 8, 9, 14, 15
 Kingfisher, 19.
 White-breasted Nuthatch, 3 to
 10, 12 to 16, 18, 19, 20, 22 to 31

- House Wren, 3 to 13
 Red-headed Woodpecker, 1 to 4, 6 to 19, 21 to 31
 Brown Thrasher, 1, 3, 7, 8
 Chipping Sparrow, 16.
 Goldfinch, 1, 3, 4, 6 to 10, 12 to 17, 19, 24, 26, 28, 29, 31.
 Flicker, 4, 6, 7 to 10.
 Phoebe, 4 to 8, 10, 12.
 Downy Woodpecker, 1, 6 to 9, 13 to 16, 18, 19, 22 to 25, 29, 30, 31
 Chickadee, 6 to 9, 11, 12, 15, 16, 19, 21, 22, 24, 25, 27 to 31
 Hairy Woodpecker, 6.
 Hell Diver, 24, 31.
 Screech Owl, 1
 Black-throated Green Warbler, 2, 7, 8, 10.
 Hermit Thrush, 3, 6, 9, 13, 16, 17, 30
 Snowbird, 1 to 4, 6 to 10, 12 to 31
 Magnolia Warbler, 1, 6
 Brown Creeper, 16, 18, 20, 24, 25, 28 to 31.
 White-throated Sparrow, 1, 3, 4, 6 to 10, 12 to 16, 18, 19, 21 to 26
 Sapsucker, 3, 4, 6, 8, 9, 10
 Myrtle Warbler, 1 to 4, 6 to 19, 21 to 24, 29, 30.
 Yellow Palm Warbler, 1, 4, 5, 8, 13
 Golden-crowned Kinglet, 1 to 4, 6, 8 to 19, 21 to 24, 26, 27, 28, 30
 Fox Sparrow, 4, 8, 11, 13, 15, 21, 31
 Pine Warbler, 1, 11, 13, 15
 White-crowned Sparrow, 4, 7, 8, 14, 15
 Ruby-crowned Kinglet, 4, 16, 17, 18
 Lark Sparrow, 4, 7, 9, 10, 15
 Indigo Bird, 4
 Black-throated Blue Warbler, 8
 Connecticut Warbler, 10, 11
 Savanna Sparrow, 14
 Montana Junco, 15, 16
 Red-shouldered Hawk, 19
 Canada Geese, 20
 Tree Sparrow, 21, 22, 23, 27, 29, 30, 31
 Bluebird, 1, 3, 4, 6, 8, 9, 12, 13, 15, 16, 25, 30

Total number of species seen in October, 50.

NOVEMBER.

- Crow, 1, 2, 4, 5, 6, 8, 11, 12, 13, 14, 18, 19, 22 to 26, 29
 Blue Jay, 2, 4, 5, 6, 9, 11, 12, 14 to 19, 22 to 26, 30
 Robin, 4
 Song Sparrow, 1, 3, 4, 5, 16
 Meadowlark, 4
 White-breasted Nuthatch, 1 to 9, 11 to 14, 16 to 19, 23 to 30
 Towhee, 1
 Red-headed Woodpecker, 1, 2, 4 to 7, 9, 11 to 14, 16 to 23, 25 to 30
 Goldfinch, 4, 5, 6, 11
 Downy Woodpecker, 4, 6, 12, 13, 14, 19, 22, 29
 Snowbird, 1 to 9, 11 to 16, 18, 21, 24, 25, 26

Chickadee, 1, 2, 4 to 7, 12, 13, 14, 16 to 19, 21, 22, 23, 25 to 29	Hell Diver, 9, 10, 11 Tree Sparrow, 4, 7, 11 to 14, 16, 21, 25
Brown Creeper, 1, 3, 4, 5, 6, 8 to 14, 16 to 19, 21, 22, 23, 25 to 29	Myrtle Warbler, 5 Hairy Woodpecker, 5 Kingfisher, 13
Golden-crowned Kinglet, 1, 3, 4, 5	Red-winged Blackbird, 14 Screech Owl, 27, 30
Total number species seen in November, 21.	
Total number of species seen in autumn, 85.	
Total number of warblers seen in autumn, 18.	
Total number of sparrows seen in autumn, 9.	

A NEW VARIETY OF SAMBUCUS.

BY J. A. NIEUWLAND.

Sambucus pubens var. **xanthocarpa** Nwd.

Sambucus racemosa var. *xanthocarpa*.

Planta in omnibus partibus major quam in specie praecipue quoad fructum, inflorescentiam fructiferam, et foliis; baccis citrini coloris, 5-6.5 mm. latis et aequa longitudine, globosis, subdepressis; seminibus ovoideis 2.5-3 mm. longis et 2 mm. latis, facie interiore subcanaliculatis et transverse irregulariter striatis.

This plant was found in a rich moist and low woods at Summit Farm No. 4, several miles west of South Bend, Ind., June 25, 1914, Type No. 15000 N. D. U. Herbarium. White fruited specimens have been noted in the older manuals but the yellow-colored fruit is the least of the characters of this plant. Following are the differences: the ovoid fruit is only 4.5-5 mm. long and 3.5-4.5 mm. broad in the red-berried type of our region, the seeds less than two and one-half times as wide, though as long, and ridged rather than flat or channelled, *i. e.* triangular in cross section. The stigma remains are separated in the new plant with depressed calyx, whereas subapiculate in the other. The fruiting panicle is about three times as large and the leaves also larger in the new variety. Only two or three panicles are found on a branch, and in the species as many as six or even more.

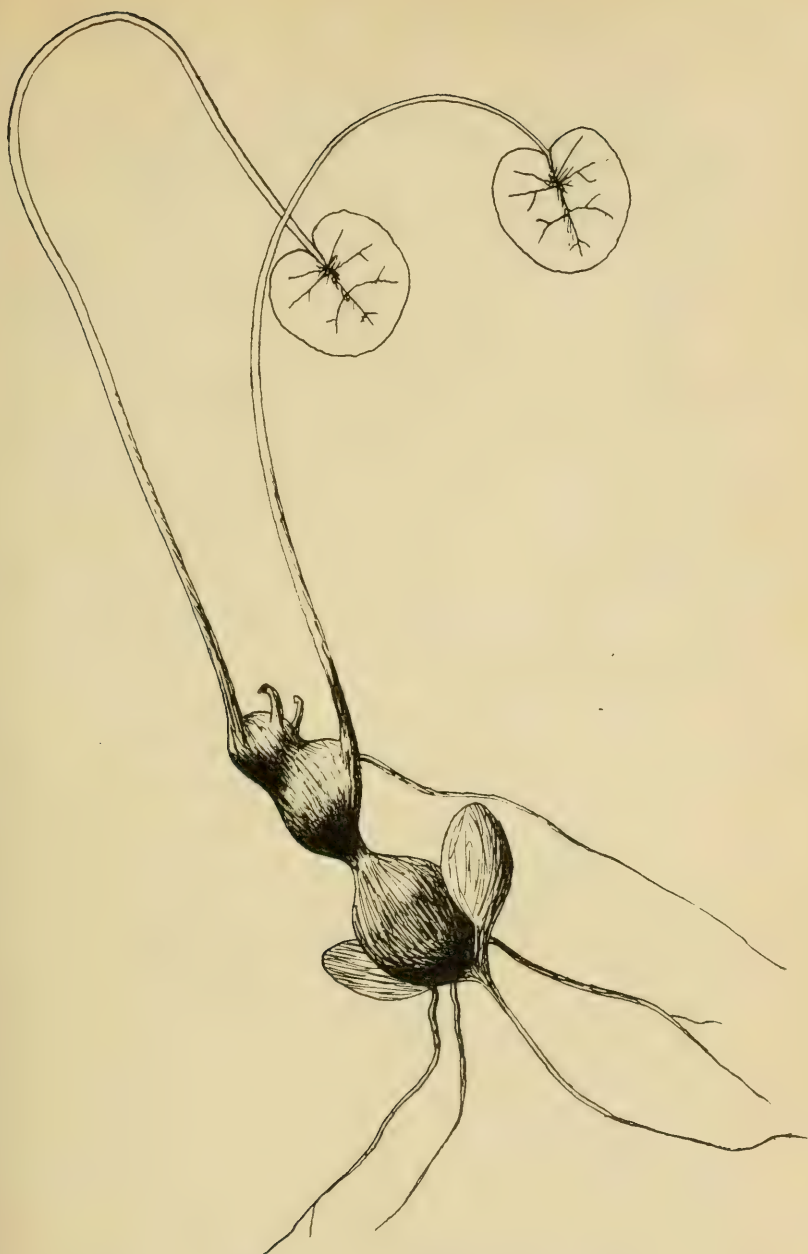


PLATE VIII. VOGT on SEEDLINGS.



PLATE IX. VOGT on SEEDLINGS.



PLATE X. VOGT on SEEDLINGS.

NOTE

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THE EDITOR, Notre Dame, Indiana

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AUGUST, 1914.

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Devoted to Natural History, Primarily
that of the Prairie States

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

CONTENTS

Field-Notes of Western Botany.—I. *Edward L. Greene* 311

Notes on Our Local Plants.—VIII. *J. A. Nieuwland* 317

Migration of Our Birds in the Autumn of 1913.
Brother Alphonsus 327

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NO. II.

FIELD-NOTES OF WESTERN BOTANY.—I.

By EDWARD L. GREENE.

During my now almost twenty years of residence eastward, in the valley of the Potomac River, very often, in the course of the spring season, I have taken respite from arduous work in library, herbarium, and at the writing table, for a few weeks, and delighted and refreshed myself by rambles in several parts of the Middle West, and sometimes on ground where more than fifty years since the keen pleasure of arduous and careful botanizing began to be enjoyed.

The field itself, some few small parts of which have furnished the substance of these Notes, is of very great extent, surpassing the combined area of the Eastern and Middle States, several times told; and no skilled botanist could spend three days of field work in any small section of it without noting interesting facts in plenty which are told in none of those manuals, each of which idly, and even audaciously, pretends to contain all that is worth knowing about the botany of that vast stretch of territory, the Prairie States.

Myosurus minimus, Linn.

This plant, though written of in the books as if occurring almost anywhere between Ontario, Florida, and from Virginia westward to the Mississippi and even far beyond it, is in reality very seldom met with anywhere; so seldom that I dare venture the guess that more than one in ten of the botanists of our land has ever seen it alive. I know no record of its having been met with in all New England, New York, New Jersey, and Pennsylvania, and the single station for it in Ontario seems very isolated. During some forty seasons of much botanizing in regions lying

eastward of the Mississippi, I have met with the plant but twice; first near Nashville, Tennessee, in 1863, last in the prairie region of south-central Illinois, in 1908. In this last instance I was impressed by the copious abundance of the plant and the fact of its occurrence there only as a weed in land long under cultivation. The individuals could have numbered hundreds of thousands, and they were growing amid more scattering and rather small plants of shepherd's purse, more or less chickweed, this dwarfed as it usually is when exposed in the open field to the full glare of sunlight all day, and there were masses here and there of *Poa Chapmaniana*, also almost everywhere a small annual or biennial *Ranunculus* of the alliance of *R. abortivus*, yet very distinct from that and even from the western *R. micranthus*, but for which I have not yet invented a name or written a diagnosis.

The tract of land where myosurus and all these its associates grew so thriftily was a fallow field. Indian corn had been grown there the second season before, then it had lain fallow for a year; and the date of my study there was in the very early part of the month of May; so that this crop of weeds, botanically so very interesting, had held possession of that field, remaining undisturbed there, all through the late summer and the autumn of the year 1907, the whole of 1908, and through almost the whole spring season of 1909.

I have long entertained a suspicion that this *Myosurus minimus* of the United States is not native here, and have been ready to believe that it came into our flora in the first place as a chance introduction from Europe.

American botanists of the seventeenth and eighteenth centuries—and they were a numerous as well as a goodly company—knew nothing of any myosurus as occurring here. None of the Bartrams, Marshalls, Collinses, well travelled as most of them were, especially southward where it was destined first to be met with, ever came upon it. Other men, and later, like Michaux, Pursh, and Nuttall, who travelled still more widely, and further southward and southwestward, and each with keener eyes, as having every one, in his own mind, the purpose of writing a general Flora of the country, knew nothing of the existence of the genus in America. This was the status of the case as late as the year 1818, or near the end of the second decade of the nineteenth century. At about this time Dr. Short, of Hopkinsville, Kentucky, sent to

Rafinesque some specimens of *Myosurus* gathered by himself at the place named. An account of the plant, as presumably indigenous to Kentucky, was published by Rafinesque in 1819 (Sillim. Am. Journ. i. 379). Several years afterwards, Dr. Leavenworth found the plant near Augusta, Georgia, so that Elliott was enabled to admit it to his Flora—now long since become the great classic of southern botany—as an American plant (Ell. Sk. i. 582). I think its second appearance by name and description in one of our Floras was with Eaton & Wright, who reports it as exclusively Southern. This was in 1840, yet so rare was the plant even at the South, that Chapman in the last issue of his Flora, which was in 1897, mentions the two localities for it as Augusta, Georgia, and Nashville, Tennessee; and Dr. Small, in even the latest issue of his Flora, adds nothing definite about its distribution there.

It is not needful to trace here step by step the history of its appearing as an element in the floras of somewhat more northerly sections of the country; but there are two interesting facts to be taken note of respecting its distribution in this country which should be considered. One of them is this, that *Myosurus minimus* as from Georgia, Tennessee, and Kentucky, does not spread northward at all, except for a little distance, and its advance this way is very slow. I think it was not heard of as being within the borders of so southerly a State as Virginia until the year 1893, when Mr. Coville collected small specimens of the species at Norfolk, on the first of April. On this it is remarked in Britton and Brown that it seems there like an introduced plant; and such beyond doubt it is; for if it had been native in any of that part of Virginia, some one or more of the ardent explorers of Virginian botany of one hundred and even two hundred years ago most probably would have found and recorded it. Its introduction at Norfolk, then, may be believed to have taken place quite recently.

Again, quite well southward, even not so far from where Dr. Short almost a hundred years since gathered it in Kentucky, is my Illinois station for the plant, where also it grows only on cultivated ground. The locality is in Marion County, a mile or more from the town of Odin, going westward along the railway, and where having observed it in so surprising an abundance, yet in a

fallow and weedy field, I at once began searching for it in all manner of wild lands, but with no success.

Circumstances like these seem to indicate that *Myosurus minimus* is in America as adventive, and even here and there naturalized, from Europe. But there are other facts relating to its distribution here that may not seem so easily reconcilable to that view. One such fact is that of its much more frequent occurrence and apparently up and down the whole length of the country in the States that lies on the western banks of the Mississippi River. It is credited to the Dakotas, Nebraska, and Kansas, and in western Missouri Mr. B. F. Bush has found it in many places. It is mentioned as being "locally common" there. The expression is that of Mackenzie and Bush, in the Flora of Jackson County, and will be understood as saying that in each of its scattered localities there is plenty of it. But Mr. Bush also obtains it, or what he calls by that name, in Arkansas, Oklahoma, and even Texas. It has also been obtained, but very scantily, on the Rocky Moutnain plains, in Colorado, and in Wyoming. As regards Colorado, however, we are to-day wholly without evidence that the species ever was naturally other than foreign to that flora. According to Mr. Rydberg it was never found there but once, and that long ago, at Denver, by Miss Eastwood. There might have been another citation of it for that same locality if the author of the Colorado Flora had consulted my own rich herbarium of Colorado plants; for I now find therein a good specimen of *Myosurus minimus* collected by myself at Denver in 1870. Even the label was written by me forty years since, and it reads Denver, whereby I am assured that I must have found the plant within the limits of the straggling town of perhaps 7000 people, which was all there was of it at that date, and before the advent of the first railway, and while there was yet no State of Colorado, but only the Territory of that name. Miss Eastwood's sojourn in Denver must have been some ten years or more subsequent to mine, and we have proof of the plants' survival there in her day, but since then no more seems to have been heard of it as in Colorado at all; and what in 1870, and even in 1880, were the wild untilled plains and sand hills where wild plants grew, and where myosurus chanced to be, is now a part of the very heart of the great city, and the little adventive may have become extinct.

I reasonably account for its early occurrence, and at that

sole point within Colorado, by a retrospect of Denver's early history. In the course of much immigration by wagon train across the plains to the Colorado mining districts, at the crossing of the Platte, only a two-days journey from the mines, all immigration came to a halt; and man and beast rested there for some days, and were refreshed before proceeding. In the midst of this riverside resting place enterprising tradesmen spread their tents or built their sheds or shops of merchandise; and these were the beginnings of Denver. Many a weed and small herb from the East and the South must have reached its introduction into Colorado by that tide of immigration; some of them probably unable to maintain other than a transient foothold, and apparently *myosurus* was among these.

Whether or not this conjecture about the transiency of *myosurus* at Denver shall prove to be the truth, certain it seems that the plant has gained its best development, as well as its strongest foothold in America in the northern parts of Missouri, and in south-central Illinois, tracts of great extent, and in nearly the same latitude. The most perfect-specimens of the species which exist in the U. S. Herbarium or in my own were distributed from near Allenton, Missouri, by Mr. Letterman. None from Europe equal them in the size and fertility of the individual plant; but when we come to speak of the material brought from far away Texas, we object that the largest and best specimens distributed by the zealous and efficient Mr. Bush of Missouri, are not *M. minimus* at all, but represent a species indigenous there, and which seems to be awaiting a name and an indication of its very good characters.

To those who have any fair knowledge of North American botany as a whole, it is well known that on both sides of the Mexican boundary beyond Texas, and also up the coast through California, and even to British Columbia, there exist not a few native species of this genus whose validity no one doubts or can doubt who has seen them; but also *M. minimus* itself is found here and there on that side of the continent, and without doubt introduced; it is therefore to be apprehended that *mysurus*, both in the original European type, and in the form of one or more of western indigenous species, may make its way into our regions eastward, from the Pacific slope, if indeed it may not have done so already.

By way of incentive to future observation on this genus as in the United States eastward let us here take note of two important matters, and first, that of the great scarcity of it to the eastward of the Mississippi River. We have already seen that it has long been known to occur here and there in the South, and to the northward of the Ohio River only in southern Illinois. All the rest of Illinois, the whole of Indiana, Ohio, Michigan, Wisconsin, Minnesota, and Iowa, show no record of *myosurus*. Then continuing eastward, Pennsylvania, New York, the whole of New England, and even down to New Jersey, Delaware, Maryland and West Virginia form an empire of territory destitute of *Myosurus*, as far as knowledge goes. Nor has it been found in either of the Carolinas. Its advent into any one of those states, aggregating as they do far the greater part of the Atlantic slope within the U. S. is to be watched for in the future. The second matter to be taken under careful observation is whether, in a given locality, the plant may the more probably have come in from the West or from the South.

The most isolated of known American stations for *Myosurus minimus* is that at Belleville, near the northwestern shore of Lake Ontario in eastern Canada, where it was discovered and collected as long ago as 1878, by Mr. John Macoun. It is at a much greater distance from the familiar Southern Midland *myosurus* territory than Denver is, and is in nothing like direct communication with any part of the United States where the species, or the genus is known. It is beyond all doubt in my mind that this East Canadian plant is an importation from some part of British Columbia or Alberta, where the species is known to occur. This interesting station, however, about which I think nothing more has been heard these last thirty-five or forty years, deserves to be revisited and the plants investigated in the light of what has been herein suggested.

Hepatica acutiloba, DC.

On a considerable number of fresh plants of this, which some years since Mr. William R. Maxon kindly procured for me from northern New York, and which were coming into flower when they reached me at Washintgon, I observed that nearly all the plants showed almost completely unisexual flowers; some exhibiting many stamens but with barely two or three pistils,

others the fullest complement of pistils but only a stamen or two, or in some I think not one. I must here state, in passing, that having a desire to study these New York plants another season, I went out to Rock Creek Park, sought there in the deep woods, a cool moist northward slope, such as this species likes, and planted them with all care, and at a place to which I believed I should easily find my way at any time; but I have sought it since in vain. The species is entirely foreign to the flora of this region. Supposing that colony which I planted, the locality of which I seem to have lost, survives, the possible future discoverer of it will stand admonished not to take the species to be indigenous there.

In the middle of May of this year 1914, in western Wisconsin, I had an opportunity of seeing and collecting this species in fruit. The achenes had reached their full size and were very nearly mature; and now I noticed, while selecting good fruiting specimens, that such as had no fruit bore among their leaves a full complement of mere naked peduncles, which, however, had in no degree withered, but were still alive and fresh despite their infertility and their nudity, by which latter term I mean that not only what we have been taught to call the flower had fallen, but even also the so-called involucreal leaves. I seemed to have before me evidence not only perfect dioecism in this hepatica, but also that what we have been taught to regard as the involucre in these plants, is really a calyx, and that the supposed sepals are a corolla. The consideration of such a fact as this, and one so strongly suggestive of a possible revolution in our philosophy of the hepatica flower, must lead to its further observation. The living but sterile peduncles seemed to end as abruptly as if there had been a joint where the "involucre" had broken away. The precise locality at which these observations were made is on a steep rocky but densely wooded slope above the Wisconsin River, at Woodman, Wisconsin.

NOTES ON OUR LOCAL PLANTS.—VIII.

BY J. A. NIEUWLAND.

Family 67. **RANUNCULACEAE** L. Gerard, Fl. Gallopr.,
p. 378 (1761).

RANUNCULUS Pliny XXV:13.

Batrachion Dioscorides and of the Greeks generally, *Ranunculus* Dodonaeus, Thalius, Camerarius, Tabernaemontanus, Gerarde, Cordus, Lobelius, Casalpinius, Casper Bauhin, Matthioli, Lacuna, Gesner, Clusius, etc., etc. *Ranunculus* Tour., Els., p. 240 (1694), p. 285 (1700), inclusive of *Ancmonanthaea*, *Ranunculus* Linn., Syst., (1735), Gen., p. 165 (1737), p. 259 (1753). *Hecatonia* Spach, Hist. Nat. Veg., VII, p. 198 (1839), also Loureiro, Fl. Cochín, China, I, p. 302 (1790).

The type of this genus is *Ranunculus sceleratus* Linn. The descriptions of the Greeks, Pliny, and of the pre-Linnaeans generally point to this plant without a shadow of doubt. Dr. Britton in the last edition of the Illustrated Flora cites *R. Auricomus* Linn., as type of the genus. The very name *Ranunculus* or *Batrachion* (a little frog) the Greek literal translation, would have suggested a plant inhabitant of marshes where frogs live. "Βατράχιον Dioscoridi lib. 2. cap. 106 οἱ δὲ σέλινον ἄγριον & Latinis ranunculus: procul dubio quod limitibus, opacisque marginibus ranarum more laetetur aut quia inter ejus frutices ranæ frequenter inveniuntur." C. Bauhin, Phytopinax, p. 319 (1596).

Ranunculus aquaticus M. Vergilius, Diosc., p. 509 (1529)

Ranunculus aquaticus Fuchs, Hist., t. 88 (1545) also (1549), *Ranunculus palustris* V. Cordus, Hist., (1561), *Ranunculus palustris* Dodonaeus Trium Prior. St. Hist., p. 406 (1554), *Ranunculus sylvestris* Dod., Pempt., p. 426, III:2:2, 1 (1583), etc. *Ranunculus sceleratus* Linn., Sp. Pl., p. 551 (1753), *Hecatonia palustris* Lour., l. c. p. 303, also Spach, l. c. *Ranunculus Scelerata* Linn. and Hesselgr., Pan Suec. Am. Acad., II, p. 250 (1751).

Michigan City, Laporte Co. (C. D. Mell), Nos. 9147 St. Joseph, Mich. 9255 Benton Harbor, Mich.

Ranunculus abortivus Linn., Sp. Pl., p. 551 (1753).

Nos. 6069 Benton Harbor, Mich. (Tidestrom), St. Joseph Co. (Rothert), 11104 Notre Dame.

Ranunculus Purshii Richards. Frank. Jr., p. 741 (1823).

Ranunculus limosus Nutt., T. and G., Fl. N. Am., I, p. 20 (1838), *Ranunculus multifidus* var. *repens* S. Wats., Bot. Kings Exp., p. 8. (1871).

Lake Maxinkuckee (H. W. Clarke).

Ranunculus delphinifolius Torr., Eaton's Man., Ed. II, p. 395 (1818).

Ranunculus multifidus Pursh, Fl. Am. Spet., p. 736 (1814), *Ranunculus lacustris* Beck and Tracy, N. Y. Med. and Phys. Jr., II, p. 112 (1823).

Pine, Lake Co., Ind. (H. H. Babcock), Hammond, Ind. (Hill), Lake Maxinkuckee (H. W. Clarke).

Ranunculus caricetorum Greene, Pitt., V. p. 194 (1903).

Nos. 560 Chain Lakes, St. Joseph Co., 900, 11102y, Notre Dame, Ind. 2485, 3677, Notre Dame (Powers), 11463½, Websters north of Notre Dame, 6214 Benton Harbor, Mich. (Tidestrom). Found also abundantly in Laporte, Porter, Van Buren, Cass, and Elkhart Cos.

Ranunculus septentrionalis Poir. in Lam. Encyc., VI, p. 125 1804.

Nos. 2487, 2528, 2529, 11160, Notre Dame, 1919, North of Notre Dame near the Michigan State Boundary.

Ranunculus pensylvanicus Linn. f., Suppl. p. 272 (1781).

Laporte Co. (Barnes), Clarke, (Umbach), Nos. 9478, 9092 Notre Dame, 11349 Husdon Lake, Laporte Co.

Ranunculus recurvatus Poir. in Lam. Encyc., VI, p. 125 (1804).

St. Joseph Co. (Rothert), Lake Maxinkuckee (H. W. Clarke), Nos. 6206 Notre Dame (Tidestrom), 3305 Benton Harbor (Tidestrom), 11277 Notre Dame. Found also in Porter, Laporte, Van Buren, Cass, Berrien, Elkhart and Lake Cos.

Ranunculus repens J. Bauhin, Hist. Font. Boll., IV, p. 207 (1598).

Ranunculus repens Linn., and Hessesgr. Pan Suec., Am. Acad. II, p. (1751), also Sp. Pl., p. 4554 (1753), *Ranunculus vinealis* Tabernaemontanus.

St. Joseph Co. (Rothert), Nos. 2485 Notre Dame, 11098 Benton Harbor. The latter is a rather larger well nourished specimen growing on the springy side of a hill in rich soil. The plant often completely invades lawns in cities.

Ranunculus acer Linn., Sp. Pl., p. 554 (1753), cor. Host.*

Ranunculus acris Linn. l. c., also Pan Suec., Amoen, Acad., l. c. Michigan City (C. D. Mell), South Haven, Van Buren Co., Mich. (L. H. Bailey), Nos. 3662 Olivers, SW. of South Bend 98 Granger St. Joseph Co. Ind. 98½, Mishawaka, Ind., 866 Galien Berrien Co., Mich.

Ranunculus fascicularis Muhl., Cat., p. 54 (1813).

Lake Co. (Hill), Nos. 17432½ Notre Dame (Powers), 11135 SE of Notre Dame, 9527 N. of Notre Dame. Rather frequent in sandy places and along roadsides in this country.

Ranunculus bulbosus Lobelius, Obs., p. 380 (1576), also Ic p. 666 (1581).

Ranunculus bulbosus Linn., Sp. Pl., p. 554 (1753) also Pan Suecus l. c. Fl. Lap. p. 229 (1737), also Matthioli Kreuterbuch, ed Camerarius p. 199b (1586), Thalius Fl. Herc., p. 96 (1588), also Gerarde etc. *Ranunculus rapaceus* Caesalpinus acc. to Bubani, "Caesalp. Herbr. Tornab." *Ranunculus exiguus* Tragus, *Ranunculus tuberosus* Dod., Pempt., III:4:4.

Lake Maxinkuckee (H. W. Clarke), Nos. 2633, 9024 Millers, Lake Co., Ind.

BATRACHIUM S. F. Gray, Nat. Arr. Br. Pl., II, 720 (1821). *Trichophyllos* Columna, Ekphrasis, (1616), also ex Morison, Pl. Ox., t. 29 (1715), not *Trichophyllum* Theophrastus = (Ulva or Moss sp.) *Ranunculoides* Vaillant, Act. p. 49 (1719), also Fl. Par. p. 105 (1723) also reduced to subgenus (1727). *Ranunculus* species of Tour. and Linnaeus. *Polyanthemum* Dodonaeus Pempt., 4:5:7 (1583), not *Polyanthemum* Pliny XXVII:12 = Double flowered *Ranunculi* = *Polyanthemum* Dodonaeus, l. c., 3:4:1.

Batrachium trichophyllum F. Schultz, Ar. Fl. Fr., I, p. 107 (1848).

Ranunculus trichophyllum Chaix in Vill. Hist. Pl. Dauph., I, p. 335 (1786), *Ranunculus aquatilis* var. *trichophyllum* A. Gray, Man., Ed. 5, p. 40, (1867).

Laporte Co. (Barnes), St. Joseph Co. (Rotbert), Lake Maxinkuckee (H. W. Clarke).

* So far has the idea of priority subessed the minds of some of our modern botanists in this country that it would appear a breach of priority to correct the grammatical blunders of Linnaeus and so though *Ranunculus* is masculine for all its other adjectives as binary captions it will remain feminine to accommodate Linnaeus' mistake in writing *acris* here for *acer*.

Butrachium circinatum (Sibth.) Rehb. Spach, Hist. Veg. VII, p. 201 (1839).

Ranunculus circinatus Sibth., Smith, Fl. Britt. I, p. 596 (1800), *Ranunculus aquatilis* var. *divaricatus* A. Gray, Man. ed. II, p. 7 (1856).

Sheffield, Ind. (Higdon and Raddin), Pine Lake, Laporte Co., Nos. 2050, 3678, 11182, Notre Dame, Ind.

HEPATICA Tragus in Brunfels Herb. Viv. Ic., II, p. 192 (1531).

Hepatica Brunfels, Herb. Viv. Ic., I, p. 190 (1532), *Hepatica* Dodonaeus Trium Stirp. Hist., p. 68 (1553), Dillenius, Nov. Gen., p. 108 (1719), Gesner, Parkinson, Thalius, etc.

Trinitas Haller, Enum. Stirp. Helvet., I, 320 (1742), also Matthioli, Anguillara, Cordus, etc. *Ranunculus* sp. Tour. Els., p. 239 (1694), I. R. H., p. 286 (1700), *Hepatica* Linnaeus, Syst. (1735), Gen., p. 162 (1737), p. 235 (1742), Hort. Cliff., p. 223 (1737), *Anemone* sp. Gen., p. 241 (1754); Sp. Pl., p. 538 (1753).

Hepatica nobilis Camerarius, Matthioli, Kreuterb. 292 (1586).

Hepatica trifolia Lobelius, Obs., p. 496, 597 (1574). as *Hepaticum trifolium* Lob. l. c. also *Hepatica nobilis* l. c. *Hepatica nobilis* Volckamer, Fl. Norimb., p. 208 (1700), also Schreb., Fl. Lip. p. 39 (1771), *Hepatica nobilis* sive *trifolia* Parkinson, Par. p. 225 (1629) *Hepatica trifolia* Morison, Oxon., p. 433 (1715). *Hepatica trifolia* Clusius Pannon., p. 745 (1583). *Anemone Hepatica* Linn., Sp. Pl., p. 538 (1753), *Hepatica verna* Linn., and Hesselgr., Pan Suec., Am. Acad., p. 250 (1751), *Hepatica triloba* Chaix, Vill. Hist. Pl. Dauph., I, p. 336 (1886).

St. Joseph Co. (Rothert), Lake Maxinkuckee (H. W. Clarke), Lake Co. (Hill), Laporte Co. (Deam), No. 490 Notre Dame. Found in woods and copses on shady hillsides in all the counties.

Heptica acuta (Pursh) Britton, Ann. N. Y. Acad. Sci., VI, p. 234 (1891).

Hepatica acuta (Pursh) Britton, Ann. N. Y. Acad. Sci., VI,

Hepatica triloba var. *acuta* Pursh, Fl. Am. Sept., p. 391 (1814), *Hepatica acutiloba* DC., Prod.; I, 22 (1824).

Lake Maxinkuckee (H. W. Clarke), Lake Co. (Hill), Laporte Co. (Deam), Nos. 512, 1837, 2764, Rum Village south of South Bend. Not as common as the preceding but found also in Laporte, Berrien, Van Buren Cos.

NEMOROSA Ruppius, Fl. Jenensis, p. 128 (1726) (1718).

Nemorosa Haller in Rup., Fl. Jen., p. 160 (1745), *Anemonoides* (Hott) Dillen, Gen., p. 107 (1719), Vaillant, A. G. (1719), Heister, Syst. Pl. p. 7, (1748), *Anemonoides* Fabr., Enum. Pl. Hort. Helm., II., II, p. 121 (1763), *Anemonanthea* (DC.) S. F. Gray, Nat. Arr. Br. Pl., II, p. 724 (1821), *Anemanthus* Fourr., Ann. Soc. Linn. Lyon., n. s. XVI, p. 323 (1868).

***Nemorosa quinquefolia* (Linn.)**

Anemone quinquefolia Linn., Sp. Pl. p. 541 (1753). *Anemanthaea quinquefolia* (Linn.) Nwd., Am. Mid. Nat., III, p. 174 (1914).

Laporte Co. (Deam), Mineral Springs (Deam), Lake Co. (Deam) (Hill), Lake Maxinkuckee (H. W. Clarke) No. 3638 Notre Dame (Powers), 2544, 9523, Notre Dame, 11032 Lapaz Junction, Marshall Co. Found also in Berrien, Van Buren, Elkhart, Cass Cos.

***Nemorosa canadensis* (Linn.)**

Anemone canadensis Linn., Syst., Ee. 12, III App. p. 231 (1768), *Anemone pennsylvanica* Linn., Mant II. p. 247 (1771).

Elkhart Co. (Barnes), St. Joseph Co. (Rothert), Michigan City, (C. D. Mell) Nos. 2505, 3645 Notre Dame (Powers), 2514, 1822, 1847, 9230, 26, 901 Notre Dame and vicinity.

ANÉMONE Theophrastus, Hippocrates, Dioscorides II:207, Pliny XXI:23.

Anemone Clusius, C. Bauhin, J. Bauhin, Dodonaeus, Lobelius, Caesalpinus, Tabernaemontnaus, Camerarius, Gerarde, etc., etc. *Anemone* Tour. Els., p. 238 (1496), I. R. H., p. 275 (1700), *Anemone* Linn., Syst. (1735), Gen. p. 163 (1737), p. 241 (1754).

***Anemone virginiana* Linn., Sp. Pl., p. 540 (1753).**

St. Joseph Co., (Rothert), Elkhart Co. (Barnes), Lake Co. (Hill), Nos. 3641 Notre Dame, Ind., Bertrand, Mich., Berrien Co. (B. Gregory), 18, 1871, 9402, 2132, 11354, 9231, Notre Dame and vicinity, 9743 Dune Park, Lake Co. Found also in Elkhart, Cass, Van Buren, Berrien, Laporte, Porter, Lake Cos.

Anemone cylindrica A. Gray, Ann. Lyc. N. Y., III, p. 221 (1836).

Laporte Co. (Deam), Elkhart, (Barnes), Lake, (Hill, Deam), Lake Maxinkuckee (Deam, Miss Beardsley), Nos. 9703 Dune Park, 19842½, Mineral Springs.

CLEMATIS Dioscorides IV:182, Pliny XXIV:10.

Clematis Matthioli, Chabraeus, Clusius, Cordus, Castor Durante, Thalius, Lacuna, Lobelius, Fesner, Camerarius, Dodo-

naeus, etc. *Clematis* Ruellius, Diosc., p. 307 (1547), Marcellus Vergilius, Diosc. p. 463, (1529), *Clematitis* C. Bauhin, also Tour. Els. p. 243 (1694), I. R. H., p. 293 (1700), *Clematitis* Linn., Syst. (1735). *Atragene* Theophrastus, Hist., V:10 (= *Clematis Vitalba* Linn.) not *Atragene* Linn. and of modern authors, *Vitalba* Dodonaeus, Guilandini, Caesalpinus, *Atragene* Anguillara, Clusius, *Viorna* Lobelius, Gerarde, not *Viorna* of modern authors, (= *Clematis Viorna* Linn.) *Clematis* Linn., Gen., p. 163 (1737), p. 242 (1754).

Clematis virginiana Linn., Amoen. Acad., IV, p. 275 (1759).

Pine, Ind. (Dodge), Nos. 3715, 1971, Notre Dame, Ind. Found in all the counties of the region.

Family 68. **THALICTRACEAE** Greene, Leaflets Bot. Obs. and Crit., II, p. 49 (1910).

SYNDESMON Hoffmg., Flora, XV, pt. 2, Intell. Bl. 4, p. 34 (1832).

Anemonella Spach. Hist. Nat. Veg., VII, p. 239 (1839).

Syndesmon thalictroides (Linn.) Hoffmg., l. c.

Anemonella thalictroides Spach, l. c., p. 240, *Anemone thalictroides* Linn., Sp. Pl., p. (1753), *Thalictrum anemonoides* Michx., Fl. Bor. Am., I, p. 322 (1803).

Lake Co. (Hill), St. Joseph Co. (Rothert), Laporte Co. (Deam), Lake Maxinkuckee (H. W. Clarke). Nos. 614 N. of Notre Dame, 3631, 3632, Notre Dame. Found in every county in the range.

LEUCOCOMA (Greene) Nieuwland, Am. Mid. Nat., III, p. 253 (1914).

Subgenus *Leucocoma* Greene, Leaflets, II, p. 55, 89 (1910) in part.

Leucocoma canadensis (Miller), Nwd., l. c. p. 254 (1914).

Thalictrum canadense Miller, Gard. Dict., Ed. 8, (1768).

Thalictrum polygamum Muhl., Cat., p. 54, (1813), *Thalictrum Cornuti* T. and G. Fl. N. Am., I, p. 38, (1838) not Linnaeus, *Thalictrum corynellum* DC., Prod., I, p. 12 (1824).

Lake Maxinkuckee, (H. W. Clarke), Nos. 2759, 11742½, Mineral Springs.

The following plants being diocious are more strictly referable to *Leucocoma* than to *Thalictrum* proper which has perfect flowers. They may well be put in a separate subgenus and perhaps even genus.

Leucocoma dasycarpa (Fisch. and Lall.) Nwd.

Thalictrum dasycarpum Fisch. and Lall., Ind. Sem. Hort. Petrop., VIII, p. 72 (1842).

Nos. 2786, S. of South Bend, Ind. on the Turkey Creek Road, in a tamarack bog. (A tall slender specimen more than 8 ft. tall), 2720, Stephenville, Berrien Co., Mich., 7428, Notre Dame (W. Johnson). 1844 Notre Dame.

Leucocoma dioica (Linn.) Nwd.

Thalictrum dioicum Linn., Sp. Pl., p. 545 (1753).

Laporte Co. (Deam), Lake Maxinkuckee; H. W. Clarke), Nos. 571, 427, 9519b, 9519a, Notre Dame, 11066 Lapaz Junction, Marshall Co.

ENEMION Rafinesque, Jr. Phys., XCI, p. 70 (1820).

Enemium Steudel, Nom., Ed. II, I, p. 554 (1840).

As Rafinesque pointed out this American genus is sufficiently distinct from the old world genus *Olfa* Adans. (= *Isopyrum* Linn., not Theophrastus and of the pre-Linnaeans). The American plant is always devoid of petals. The European and old-world *Isopyrum* Linn. has 5 nectariform or slightly sac-like petals. The old world plants are thus intermediate between *Enemion* Raf. on the one hand and *Aquilegia* on the other.

Enemion biternatum Raf., l. c.

Isopyrum biternatum (Raf.) T. and G., Fl. N. Am. I, p. 660, (1840).

Lake Maxinkuckee (H. W. Clarke), Nos. 453, 816, Rum Village S. of South Bend, 2541, 9526, Notre Dame. Found in all the counties.

Family 69. **HELLEBORACEAE** Loiseleur-

Delongchamps, Man. Pl. Us. (1819).

Paeoniaceae Bartling, Ord. Nat., p. 251 (1830) in part.

COPTIS Salisbury, Trans. Linn. Soc., VIII, p. 305 (1803).

Coptis trifolia (Linn.) Salisb. l. c.

Helleborus trifolius Linn., Sp. Pl., p. 784 (1762).

Berry Lake, Ind., Pine, Ind. Lake Co. (Higdon and Raddin), Millers, Lake Co. (Umbach), Mineral Springs (Dame), Nos. 938, 9098, 11667, 2768 Mineral Springs, 9162 Sagunay, Laporte Co.

AQUILEGIA Fuchs. Hist. Stirp. p. 39 (1546).

Aquilegi Marcellus Vergilius Cor. Herm. Barb., 50, 4, 39, (1529), *Aquileia* Tragus in Brunfels, Herb. Viv. Ic., II, p. 183

(1531) form of *Aquilegia*. *Aquilegia* Dodon., Hist., p. 124 (1557), also Bauhin, Royen, Dalibard, Morison, etc., etc., Tour., Els., p. 339 (1694), I. R. H., p. 428 (1700), Linn., Syst. (1735), Gen. p. 160 (1737); p. 236 (1754). *Aquilina* Lobelius, Obs. p. 440 (1576) also Castor Durante, Tabernaemontanus, Breynius, Matthioli, Hist., p. 320 (1554) p. 332, (1557) also Matthioli. Il. Diosc. p. 409 (1552).

Aquilegia canadensis (Cornuti) Linn., Sp. Pl. p. 534 (1753).

St. Joseph Co. (Rothert), Lake Maxinkuckee (H. W. Clarke), Lake Co. (Hill), Porter (Deam), Nos. 2023, 13472½ Notre Dame (Powers), 6056 (Tidestrom), 589, 9445, 11083, 12346½ Notre Dame, 1746½ Lapaz Junction, 10008 Mineral Springs.

POPULAGO Tabernaemontanus, Neeuw Kreuterb., p. 118, (1590).

Populago Tours., Els., p. 238 (1694), I. R. H., p. 273 (1700), *Caltha* Linn. Syst. (1735), Gen. p. 165 (1737), p. 244 (1754), not *Caltha* of the older botanists, (= *Calendula*). *Populago* Moench, Meth., p. 300 (1794).

Populago palustris (Linn.) Moench. l. c.

Caltha pulustris Linn., Sp. Pl., p. 588 (1753), also Pan Suecus, p. 250 (1751).

Lake Co. (Deam), Laporte Co. (Deam), Lake Maxinkuckee (H. W. Clarke), Nos. 1968, 14366½, 1948½, Notre Dame, Ind. (Powers), 5816, Notre Dame, 476, Niles, Berrien Co., Mich., 458, Edwardsburg, Cass Co., Mich., 829, North Liberty, St. Joseph Co., Ind., 2751, Mineral Springs, Porter Co., No. 948 from the same place has the upper leaves under the inflorescence somewhat lobed not unlike those of the red maple, the leaves were laciniately toothed the plant very tall and slender owing to the fact that it grew in the shade in a tamarack bog. The flowers were only about one half as large as in the other plants throughout the region and the plant was in full bloom in June.

CONSOLIDA Brunfels, Herb. Viv. Ic., I, p. 84c (1532).

Consolida Anguillara, Castor Durante, Tabernaemontanus, Gerarde, Lobelius, Camerarius, S. F. Gray, etc., *Delphinium*, Dodonaeus, Hist., p. 123 (1557), also Clusius, Tour., Els., 338 (1694), I. R. H. p. 426 (1700), Linn., S. Syst. (1735), Gen. p. 158 (1737) p. 236 (1754) *Delphinium* Spach, Hist. Nat. Veg. VII, p. 355 (1839).

Consolida regalis (Brunfels) S. F. Gray, Ant. Arr. Br. Pl. II, p. 711 (1821).

Delphinium Consolida Linn., Sp. Pl., p. 530 (1753).

A specimen of this plant is present in the University herbarium collected by Dr. Powers.

Consolida Ajacis (Linn.).

Concolida Ajacis Schur., in Verb. Siebenb. Ver. Naturw. IV, p. 67, (1853). *Delphinium Ajacis* Linn., l. c.

Lake Co. (Deam), Van Buren Co., (H. S. Pepoon). I have found it escaped around Notre Dame but did not collect specimens.

Macrotrys Raf., Med. Rep. N. Y., V, 352 (1808).

Macrotys Raf. Jor. Bot. II, p. 170 ex DC. Prod. I, p. 64 (1824), also Syst. p. 383 (1818), *Cimicifuga* Linn., Syst. Ed. 12, p. 659 (1747), also Am. Acad. II, p. 354 (1751) in part.

Macrotrys racemosa Sweet, Hort. Brit. Ip. 9 (1827).

Cimicifuga racemosa Nutt., Gen., II, p. 15 (1818). *Actaea racemosa* Linn., Sp. Pl., p. 504 (1753).

The plant has been reported from Pine Station, Ind. (Lake Co.) by Brennan.

CHRISTOPHORIANA Gesner, Hort. Ger. p. 253 (1561).

Christophoriana Lobelius Adv. p. 304 (1576) also Parkinson, Dodonaeus, Clusius, Volckamer, Dillenius, Ruppius, Haller, Adanson, Micheli, Manotti, Zinn, Buxbaum, Moench, Heister, etc. Tour., Els., p. 248 (1694), I. R. H. p. 299 (1700) *Actaea* Linn., Syst., Gen. p. 151 (1737), p. 222 (1751) not *Actaea* Pliny, XXVII, 7, 26, and of some of the ancients = *Sambucus Ebulus* Linn. (but certainly not our plant.)

Christophoriana rubra (Ait.) Nwd.

Actaea rubra (Ait.) Willd., Enum. p. 561 (1809), *Actaea spicata* var. *rubra* Ait. Hort. Kew., II, p. 221 (1789).

No. 9682 Notre Dame, with the ripe fruit. Also nos. 2530, 2523 Notre Dame.

Christophoriana alba (Linn.) Nwd.

Actaea alba (Linn.) Miller Gard. Dict., Ed. 8, no. 2, (1768), *Actaea spicata* var. *alba* Linn., Sp. Pl., p. 504 (1753).

Lake Maxinkuckee (H. W. Clarke), Nos. 2051 Notre Dame (Powers), 11725 Notre Dame, 500. 505 St. Joseph River near Notre Dame, 2075, 2707, 10292, 11708 Rum Village south of South Bend. Very common. Found also at Munich, Mich. growing with the preceding but more common. Also at Stephenville, St. Joseph,

Galien, Benton Harbor, Edwardsburg, Mich. Mineral Springs, Tamarack, Millers, Dune Park, Michigan City, Mishawaka, North Liberty, Lakeville, etc.

HYDRASTIS Ellis, Linn., Syst., ed. 10, p. 1088, (1759) May.

Warnera Miller Gardeners' Dict., (1759) June (1763) Abr. Gard. Dict., *Warneria* Miller, Abr. Gard. Dict., (1763).

Hydrastis canadensis Ellis, l. c.

Warnera canadensis Miller Gard. Dict., (1768).

Lake Maxinkuckee (H. W. Vlarke), Nos. 523, 468, 823, 402, 608, 1892, 2553, 2531, 6060, 11041, N. of Notre Dame. Reported by Kaczmarek from south of Laporte. Found also in Studebaker's woods, S. of So. Bend, but very scarce.

(To be continued.)

MIGRATION OF OUR BIRDS IN THE AUTUMN OF 1913.

BY BROTHER ALPHONSUS, C. S. C.

The autumn migration of our birds began on August 3, with the departure of the Yellow Warbler. The Orchard Oriole was last recorded on July 22, but this can not have been approximately the time of the bird's migration; for in 1912 the last record was nearly a month later—on August 20. Another species that was observed for the last time on July 15 was the Bobolink, which is the latest record I have ever made for this species. The last week in August marked the arrival of the first migrants—notably warblers—from the north. The total number of migrants observed this autumn was considerably larger than any previous records for the same season. The writer's own diligence and good fortune may account for this notable increase.

In September the arrival of migrants from the north continued throughout the month, the total number being 20 species. The very early arrival of the Snowbird was unprecedented, for last autumn this species was first observed on Sept. 28. The Kingbird's date of migration was the latest I have ever recorded—no doubt due to the very warm weather in the early part of September. The Crested Flycatcher migrated 5 days earlier than last autumn. The last record for the Chipping Sparrow in 1912 was

on Spet. 6, or 63 days earlier than the date of migration in 1913. This year the species was observed almost daily throughout September, but there was only one record for October—on the 14th—with an absence of 17 days. But the most striking occurrence of the autumn migration of 1913 was the presence of the Red-headed Woodpecker throughout the season and into winter.

Nearly every species was recorded later in the autumn of 1913 than in that of 1912. Here are some of last year's dates of migration and the difference in days from this year's dates:: Brown Thrasher, Sept. 13, 25 days earlier; Catbird, Sept. 18, 7 days earlier; Wood Pewee, Sept. 18, 10 days earlier; Redstart, Sept. 20, 8 days earlier; Indigo Bird, Sept. 22, 13 days earlier; Mourning Dove, Sept. 23, 17 days earlier; Sapsucker, Oct. 3, 8 days earlier; Cowbird, Oct. 11, 5 days earlier; Yellow Palm Warbler, Oct. 12, 2 days earlier; Hermit Thrush, Oct. 13, 19 days earlier; Field Sparrow, Oct. 14, 11 days earlier; White-throated Sparrow, Oct. 25, 2 days earlier; Robin, Oct. 27, 9 days earlier; Meadowlark, Oct. 15, 21 days earlier; Myrtle Warbler, Oct. 27, 10 days earlier; Kingfisher, Oct. 27, 18 days earlier; Red-winged Blackbird, Nov. 1, 16 days earlier; Killdeer, Oct. 21, 4 days earlier.

A few species migrated later in 1912 than in 1913: Chimney Swift, on Sept. 29, 5 days later; Red-breasted Nuthatch, on Oct. 24, 4 days later; Bluebird, on Nov. 8, 9 days later; Song Sparrow, on Dec. 15, 8 days later.

Migrants seen in 1913 and not in 1912 were: Grasshopper Sparrow, White-crowned Sparrow, Swamp Sparrow, Savanna Sparrow, Lark Sparrow, Fox Sparrow, Bay-breasted Warbler, Black-throated Blue Warbler, Magnolia Warbler, Tennessee Warbler, Nashville Warbler, Chestnut-sided Warbler, Prairie Warbler, Connecticut Warbler, Sycamore Warbler, Overbird, Long-billed Marsh Wren, Blue-headed Vireo, Night-hawk, Water Thrush, Brown Creeper, Maryland Yellowthroat, Black-billed Cuckoo, Virginia Rail, Lesser Yellowlegs, Blue Gray Gnatcatcher, Wood Thrush, Montana Junco; total, 28 species.

Migrants seen in 1912 and not in 1913 were: Loggerhead shrike, Orchard Oriole, Wilson Warbler, Herring Gull, Vesper Sparrow, Cardinal, Northern Shrike; total, 7 species.

AUGUST.

3 Yellow Warbler	29 Black and White Warbler arrived
5 Grasshopper Sparrow	29 Redstart arrived
14 Alder Flycatcher	30 Hermit Thrush arrived
15 Whip-poor-will	30 Black-throated Green Warbler arrived
16 Loom	30 Bay-breasted Warbler arrived
25 Least Flycatcher arrived	31 Barn Swallow
25 Purple Martin	31 Greater Yellowlegs.
28 Long-billed Marsh Wren	
28 Overbird arrived	

SEPTEMBER.

2 Black-throated Blue Warbler arrived	20 Hummingbird
3 Red-eyed Vireo	20 Red-breasted Nuthatch
4 Baltimore Oriole	20 Ruby-crowned Kinglet arrived
4 Magnolia Warbler arrived	20 Prairie Warbler
4 Snowbird arrived	23 Chestnut-sided Warbler
5 Swamp Sparrow	23 Sycamore Warbler
5 Tennessee Warbler arrived	23 Tennessee Warbler
5 Nashville Warbler arrived	24 Chimney Swift
6 Kingbird	24 Yellow-billed Cuckoo
7 Blue-headed Vireo	24 Lesser Yellowlegs.
8 Nighthawk	24 Lark Sparrow arrived
9 Connecticut Warbler arrived	25 Catbird
10 Nashville Warbler	25 Bay-breasted Warbler
11 Prairie Warbler arrived	26 Overbird
11 Cedarbird	26 Least Flycatcher
11 Pine Warbler arrived.	26 Virginia Rail
12 Crested Flycatcher	26 Blue Gray Gnatcatcher
12 Water Thrush arrived	27 Golden-crowned Kinglet arrived.
13 Brown Creeper arrived	27 Myrtle Warbler arrived.
13 Maryland Yellowthroat	27 Black and White Warbler
14 Black-billed Cuckoo	27 Water Thrush
15 Warbling Vireo	28 Wood Pewee
15 White-throated Sparrow arrived	28 Redstart
19 Sapsucker arrived	28 Savanna Sparrow arrived
19 Sparrow Hawk	30 Wood Thrush

OCTOBER.

5 Indigo Bird	15 Montana Junco arrived
6 Chickadee arrived	16 Cowbird
6 Hairy Woodpecker arrived	16 Pine Warbler
7 Magnolia Warbler	16 White-crowned Sparrow
9 Brown Thrasher	16 Lark Sparrow
9 Black-throated Blue Warbler	17 Chipping Sparrow
10 Mourning Dove	17 Montana Junco
11 Flicker	19 Ruby-crowned Kinglet
11 Black-throated Green Warbler	20 Red-shouldered Hawk
11 Sapsucker	20 Canada Geese
12 Connecticut Warbler	21 Tree Sparrow
13 Phoebe	25 Bronzed Grackle
14 House Wren	27 Field Sparrow
14 Yellow Palm Warbler	27 White-throated Sparrow
15 Savanna Sparrow	31 Bluebird
	31 Killdeer

NOVEMBER.

1 Hermit Thrush	6 Hairy Woodpecker
1 Fox Sparrow	6 Myrtle Warbler
2 Towhee	12 Kill Diver
5 Robin	14 Kingfisher
5 Meadowlark	15 Red-winged Blackbird
6 Golden-crowned Kinglet	

DECEMBER.

1 Meadowlark reappeared	11 Bronzed Grackle reappeared
2 Meadowlark departed	14 Goldfinch
7 Song Sparrow	16 Brown Creeper

Total number of migrants seen, 85.

CRITICAL NOTES ON NEW AND OLD GENERA
OF PLANTS.—III.

BY J. A. NIEUWLAND.

Chlorophyllum.

A rather unusual oversight, such in fact as one would scarcely expect in modern biological nomenclature is the case of the fungus name *Chlorophyllum*. Rafinesque on occasion had published a name and afterward quite unaware apparently or forgetful of his own previous publication thereof used it a second time for an altogether different plant.¹ In volume 9, p. 172 of the North American Flora,² Murrill founded a new genus of fungi from Guiana on *Neurophyllum viride* Pat. which he called *Chlorophyllum*, and in the same work, volume 10, p. 64³ there appears another *Chlorophyllum* Mass.⁴ a plant not only in the same family but also the type from the same country. It is perfectly evident that in a work as well prepared as the North American Flora the two can not be expected to merit survival under the same name. That of Massey seems to possess priority and another designation is demanded for Murrill's *Chlorophyllum*. Even in mycology where the nomenclature has not been as exactly and exhaustively systematized by any means as in the case of the ferns and phanerogams, exemplified by the Index of Christensen and Kew, one could hardly have looked for a mistake like the above mentioned, and in the Flora at that. Such oversights are, however, easily made, and without blame to any extent on the part of either author or editor, so difficult a matter is the perfect editing of a work of the scope and pretensions of this Flora.

The name *Chlorophyllum* is a name especially for a chlorophyllless plant, nor even a real leafy one is hardly a good one for either, nor is the use of a name already used in botany as the latin equivalent of the functioning photosynthetic "organ" of plant food elaboration to be recommended as applicable to systematic entity or genus. To replace the antedated name

¹ See Am. Mid. Nat. I, p. 238 (1910).

² Feb. 3 (1910).

³ July 28 (1914).

⁴ Massey, Kew. Bull. p. 136 (1898).

we may suggest *Murrillia*.¹ Following is the synonymy:

Murrillia Nom. nov.

Chlorophyllum Murrill, N. Am. Fl. 9, p. 172 (1910) not *Chlorophyllum* Massey, Kew Bull. p. 136 (1898).

Chlorophyllum viride Murrill l. c. *Neurophyllum viride* Pat. Jour. de Bot. 2, p. 406 (1888).

Phragmites.

The name *Phragmites* Trin.² is still retained by our manual makers, ad that in spite of their rules that do not tolerate the retention of a name that had been previously used for another plant whether in the judgment of present day nomenclators the first named plant deserved valid generic standing or not. There already existed a different or doubtful *Phragmites* ³Adans., equivalent to *Sorghum* Linn.(?) more or less modified. The oldest designation of a plant included in the genus, by a separate designation, is perhaps *Trichoon* Roth.⁴ Even if this be inapplicable the other available names are either doubtfully used, such as *Czernya* Presl⁵ or possibly attempts at further segregation from *Phragmites* Trin. itself as perhaps in case of *Oxyanthe* Steudel.⁶ In fact, it may not be altogether certain that *Trichoon* is unobjectionable, though it at least seems to be prior. If Adanson's name is not at least doubtfully applied then why is not the name attributed to him? May perhaps the following be suggested as synonymy?

Trichoon⁷ Roth, l. c.(1798).

Phragmites Trin. l. c. (1820) not *Phragmites* Adans. l. c. (1763) *Ceryna* (?) Presl, l. c. (1818), *Oxyanthe* Steudel, l. c. (1855) (?).

Trichoon Phragmites (Linn.) nov. comb.

Arundo Phragmites Linn., Sp. Pl., p. 81 (1753), *Phragmites communis* Trin. l. c. (1820) *Oxyanthe Phragmites* (Linn.) (?)?.

¹ It may be possible that even the name *Murrillia* be preoccupied and in such case *Murrillomyces* alternatively suggested.

² Trinius, K. B., Fund. Agrost. p. 134 (1820).

³ Adanson, M. Fam. des Pl., II, p. 34 (1763)

⁴ Roth, Roem., Arch. I, III, p. 37 (1798).

⁵ Presl., K. B., Gram. Sic. p. 23 (1818).

⁶ Steudel, E., Syn. Pl. Gram. p. 197 (1855).

⁷ Should none of the aforementioned names be applicable and a new one demanded, we suggest *Miphragtes*.

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NOVEMBER, 1914.

NO. 12

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

CONTENTS

New Species of <i>Ranunculus</i>	<i>Edward L. Greene</i>	333
The Anatomy of <i>Megalodonta Beckii</i>	<i>A. V. Hoeck</i>	336
New Plants from North Dakota.—XII	<i>J. Lunell</i>	342
Notes on Our Local Plants.—IX	<i>J. A. Nieuwland</i>	346
A New <i>Antennaria</i>	<i>B. F. Bush</i>	352
Notes on <i>Hemerocallis</i>	<i>N. M. Grier</i>	353
Comparative Migration of Our Birds in Autumn	<i>Brother Alphonsus, C. S. C.</i>	355

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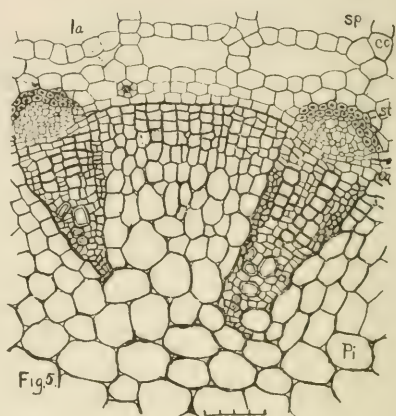
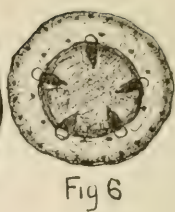
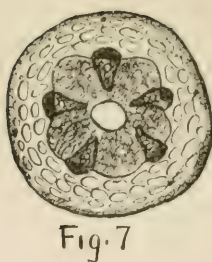
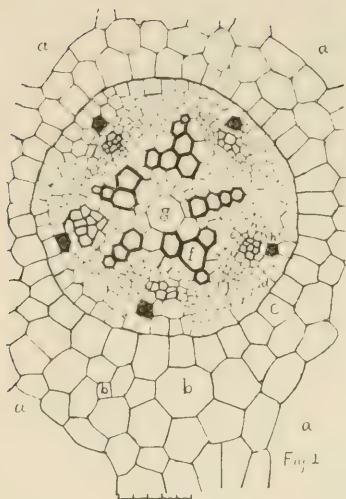


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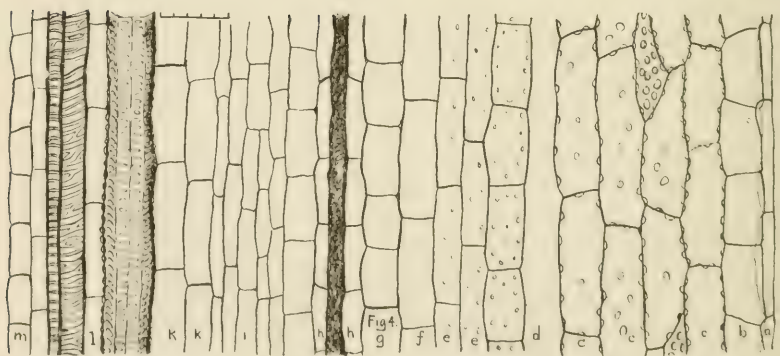
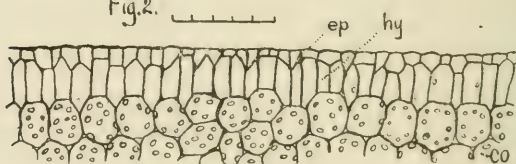
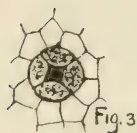
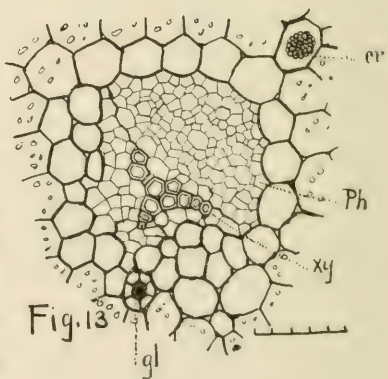
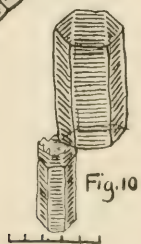
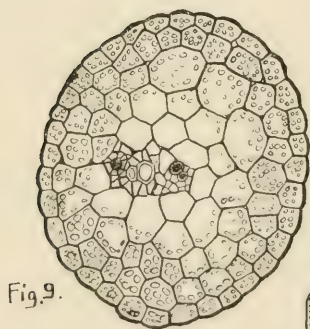
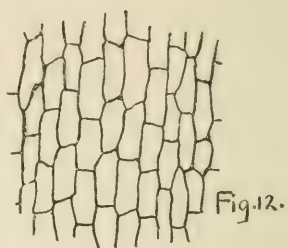
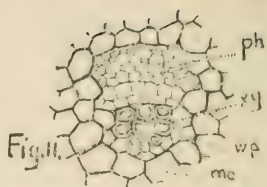
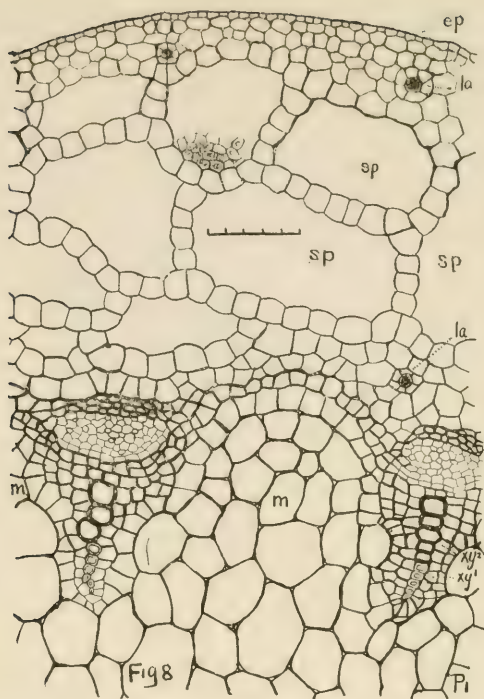


Plate XI. HOECK ON ANATOMY OF MEGALODONTA BECKII.



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NO. 12.

NEW SPECIES OF RANUNCULUS.

BY EDWARD L. GREENE.

Ranunculus cymbalistes, nov. spec.

Planta perennis circa 2 dm. alta, carnosula, primo intuitu glabra, at sub lente pilis longiusculis tenuibus subappressis undique conspersa. Radices partim breves, carnosae et subfusiformes, partim multo longiores et tenuiter fibrosae. Folia radicalia longipetiolata, subcordato-reniformia, $1\frac{1}{2}$ -2 cm. longa, 2-3 cm. lata, leviter 7-crenata, caulina sessilia, 3-partita. Corolla 1 cm. lata; petala 5, ovalia, obtusa. Fructus nondum visus.

An interesting and strongly characterized member of the *R. abortivus* alliance, known only as collected in extreme southern Indiana, 20 April, 1913, by Mr. Charles C. Deam, where it inhabits wooded knolls, under *Pinus Virginiana* and *Quercus alba*; the special locality two miles west of New Albany. The flowers are not as large as those of *R. Harveyi*, yet much larger than those of the rest of its allies of this group. The foliage remarkably simulates that of *Linaria Cymbalaria*.

Ranunculus delitescens nov. spec.

Vix 2 dm. altus, tenuis, erectus, parce ramosus. Petioli pro parvitate foliorum longi, et una cum caulis parte inferiore, pilis albidis tenuissimis rectis adscendentibus conspicue villosi. Folia parvula, primordialia circa $1\frac{1}{2}$ cm. lata, suborbicularia, basi truncata, apice plus minus distincte crenato-dentata, perpauca sequentia trilobata vel trisecta; caulina sessilia tripartita, segmentis linearibus integris, folia omnia, praecipue basalia, undique pilis longis adpressis plus minusve sparsim obsita. Flores minuti. Carpellorum capitula parvula, subglobosa.

Species of the Atlantic slope, east of the Alleghenies, very distinct in character, yet known to me in only two sheets of specimens, both in U. S. Herb., the best one being from rocky woods at Guttenberg, New Jersey, 12 May, 1895, by William Van Sickle; the other from Harper's Ferry, West Virginia, 11 May, 1889, by F. V. Coville.

Ranunculus Holmii, nov. spec.

Planta 3 dm. alta et ultra; petioli una cum caule pilis longis tenuissimis vel saepissime deflexis vestiti. Folia radicalia plerumque trifoliolata, foliola petiolulata, cuneato-obovata, supra medium trilobata, caulina subsessilia, 3-5-divisa, segmentis perangustis, apicem versus saenissime 3-lobis ceterum integerrimis. Flores minimi, sepalis ovalibus, concavis, extus valde pilosis; filamentis brevibus, liguliformibus. Carpella fere orbicularia, vix subcompressa, in acumen brevem, tenuem et arcute recurvem desinentia, et in capitulum ovale obtusum conferta.

A common plant of low woodland borders and open thickets, in rich alluvial soil along the Potomac River and its tributaries in Maryland and Virginia, where it flowers and fruits in April and early May, its season being entirely in advance of that of *R. abortivus* with which it has been confused, and which occurs in these regions only under widely dissimilar environment.

It has usually been listed as *R. abortivus* var. *micranthus*; but this quite as erroneously; for that plant is of Missouri and Arkansas, according to Nuttall its author; and the comparatively diminutive plant of this affinity which comes into our herbaria from those distant parts, and which answer to Nuttall's description, as far as his meager and inadequate account of it goes, has remarkably elongated heads of achenes. They are too long to be called oval, and may be called subcylindric. If this be Nuttall's plant, this character, now first named, is a better one by far than any indicated by Nuttall. As to its fruit, and even as to size, *R. Holmii* is clearly distinct.

Ranunculus ruderalis, nov. spec.

Perennis, radicibus longis, fibrosis, attamen sursum breviter et leviter incrassatis. Caulis 5 cm. altus, validulus, usque ad medium simplex, inde ramosus. Herba tota glaberrima, laete

virens, nullo modo nitens, at quasi leviter glaucescens. Folia radicalia pro planta parvula, longe petiolata, pelerumque rotundato-reniformia, 2-3 cm. lata, crenata; caulina inferiora radicalibus majora, breviter sed distincte petiolata, profunde trisecta, segmentis cuneato-flabelliformibus vel anguste rhomboideis, supra medium plus minus distincte crenatis vel dentatis, suprema sessilia, tripartita, segmentis oblongis integris. Flores minimi. Capitula globosa. Achaenia modice compressa et stylo brevissimo acuto recurvo apiculata.

First observed by me as growing on a railway embankment near Linden Station of the Baltimore and Ohio Railway, within the State of Maryland, but not far outside the District of Columbia, this in May, 1912. Then a few weeks later I saw it growing in great profusion along the line of the same railway quite within the District, namely, on the outskirts of Tacoma Park eastward. It grows there in abundance in the most exposed places, particularly about piles of brush-wood or other rubbish. In respect to its peculiar habitat, as well as by many diagnostic characters, it is in strong contrast to the less common *R. abortivus*, the leaves of which are thrice as large, besides being readily distinguished always by their deep-green color, with a polished and shining surface; and this, the real *R. abortivus* inhabits only rich soil, entirely in the shade of woods, or if within city limits, in like shaded proximity to walls and buildings.

R. ruderalis is, indeed, next of kin to *R. Allegheniensis*, which it much resembles in the small size and light shade of leaves, without a trace of that lustre characteristic of *R. abortivus* alone; but while the achenes of *R. Allegheniensis* are tipped with a long and conspicuous style, those of *R. ruderalis* end so bluntly as to seem to have no style at all, and a lens is requisite to reveal their presence.

The fact of its having been found by me nowhere but in proximity to a line of railway that runs westward half across the continent should have suggested to me the possibility of its being in this part of the world only as an immigrant from the West; yet the thought did not occur; therefore it was with surprise that I observe it a year later, in the prairie region of the Middle West, and saw that it was clearly native there, where the botanists of that region, never having known the real *R. abortivus*, called it always by that name.

THE ANATOMY OF MEGALODONTA BECKII.

BY A. V. HOECK.

Owing to the abundance of material found during the past vacation at Bankson Lake, Cass Co., Mich., as also because of the unique character of the plant itself as a submerged composite, it was considered possible that the anatomical study of *Megaladonta Beckii* (Torrey) Greene would show some interesting features structurally. The following notes are the result of the investigation of the plant, which is rather abundant in the places where it is found, but has not been reported from many localities in our region.

The plant was first discovered by Dr. Lewis C. Beck in Schuyler's Lake near Schenectady, N. Y. It was published by Torrey who referred it to the genus *Bidens* as *Bidens Beckii* in 1821.¹ Dr. E. L. Greene² raised the plant to generic standing as type of his new genus *Megalodonta*. He published at the same time a second species *M. nudata* from the Adirondacks, and another species from Greene Lake, Washington. As characteristic distinctions from the genus *Bidens* is mentioned especially the singular peculiarity not only among the *Bidentideae* as a group but even of the whole composite family, aquatic habit with submersed and dissected foliage not so much different in appearance from that of *Batrachium* (*Ranunculus*) *aquatile* (Linn.) Wimm³. of the old world or our own *Batrachium trichophyllum* (Chaix) Bosch.⁴ The flowers both ray and disk are peculiar. The rays are "retuse and notched instead of obtuse and entire." "The disk corollas are slender and clavate." "The achenes with their not at all compressed or angled but almost terete body surmounted by several long stout persistent awns of great size and prominence in relation to the essential part the fruit"⁵ are the other characters of note. The generic name of the plant is derived from the Greek

¹ Torrey, J. in Spreng. Neue Entdeck., 2, p. 135 (1821) also Torrey, J., Flora of New York, 1, p. 388, pl. 68, (1843), Torrey, J., Compend. p. 312 (1826) Spreng. Syst. 3, p. 455, (1826), Beck, L. C., Botany, p. 207 (1833) p. 191 (1848).

² Greene, E. L., Pittonia, 4, p. 271 (1901).

³ Wimm. Fl. Schles. p. 8 (1841).

⁴ Bossch, Prod. Fl. Bat., p. 5 (1850).

⁵ Greene, l. c.

μέγας, μέγαλος (megas, megalos) great, large and ὀδούς, ὀδόντος, (odous, odontos) tooth.

The plants used for study were found submerged in both Bankson and North Bankson Lakes in bloom during the latter part of August and the early part of September. The submerged leaves are opposite or whorled in 3's, and finely repeatedly dissected on the palmate plan. The emerged leaves two or three pairs in number are narrowly lanceolate to oblong and laciniately toothed, pinnate and reticulately veined. The lower emerged or intermediate leaves are often more or less deeply lobed or cleft appearing as transition forms from the aquatic to the aërial forms. The aquatic foliage invariably withers when by design or accident exposed even for a short time to the air though the emerged may for a rather long time remain undecayed when submerged. The plant grows in rather deep water from several decimeters to several meters, the lower stem or rhizome rooting below the mud level. The submerged floating stem and the aerial part are rather similar in structure and have large air cavities in the cortical region as also in single large central air space in the pith. The rhizome rooting below in the mud is devoid of this central air space and the cortical spaces are smaller and fewer. The adventitious roots at the nodes, even on the floating stem, and the upper roots are conspicuously green with chlorophyll. These roots reach down several decimeters or over a meter and when reaching the muddy bottom branch into numerous smaller divisions. The part of the stem creeping in the mud is not much over half the diameter of the floating aquatic stem, or about 2 mm. and sometimes less. The aquatic foliage is nearly as persistent as that of *Cabomba* but not as deciduous as that of *Neobeckia*. (*Roripa* or *Nasturtium aquatium*). A rather poor drawing of the plant is found in Torrey's Flora of New York already cited and one somewhat better perhaps in Britton and Brown's Flora, both editions pp. 440 and 500 respectively. The characters of the plant may be had in the works cited as also from our common manuals more or less incompletely.

THE ROOT.

The young root has a well marked stele surrounded with well defined endodermis limiting the periblem (Fig. 1). The cell structure of the epiblema seems in no particular way different from that of the

epidermis of the stem. As a rule even in the older roots there is but one series of intercellular spaces more or less oblong and irregular in the cortex and with their ends pointing to the outside and inwards to the stele or anticlinally while in the stems they are periclinal (Fig. 1a). Only one series of the larger spaces are found in the root and several in the stem, though in the former a few smaller ones are occasionally met with (Fig. 1b). Only one to three layers of cells are found between the larger spaces and the stele inclusive of the endodermis. The cortex of the larger adventitious roots (which were the only ones found for study) has a large number of chlorophyll grains even as far inwards as the endodermis excluded. Nor is chlorophyll found in either the epiblema or the palisaded hypodermal layer of the older roots (Fig. 2). The stele has a wood bundle of the radial type and the xylem is exarch pentarch, the phloem alternating with the xylem rays. Just outside of each phloem strand is a latex tube containing a brownish somewhat resinous substance. The tube is surrounded in this case by four secreting cells in the older roots (Fig. 3) though in young specimens these are not as yet well differentiated or developed. These latex tubes are rather straight mostly unbranched tubes with four secretion cells around them (Fig. 3) and are found throughout the plant, and in the stem the secretion cells are more than four, usually about six. (Figs. 5, 8, 9, 13, 17). The pericycle is rather well differentiated as a marked layer of medium sized cells in young parts of the roots, but later it loses to some extent its characteristic appearance the cells of the cortex seeming to pass by gradual variations of size to those of the stele. Very little secondary change takes place in the stele especial in the xylem (hadrome) portion thereof; the ducts always are few in number as would be expected in this case because of the needlessness of these water conducting vessels in aquatic plants. The larger vessels formed later as metaxylem or perhaps secondary xylem are scalariform pitted, those of the protoxylem are annular and later spiral transitional to pitted. Longitudinal section of the root shows the peculiar variations of the tissues in the root in a marked way (Fig. 4). From the exterior we have in order the outer layer of cells (a) and the hypodermal layer (b) these two both devoid of chlorophyll. The cortical cells on both sides of the large intercellular spaces resemble one another, and bear chlorophyll in larger or smaller quantity depending on the exposure

to light. The section shown was made somewhat obliquely through the organ, showing several layers of cells of the tissue connecting the outer layers with the inner near the endodermis (f). In older roots six or seven of the cells in the outer part of the phloem acquire thickened walls though the thickening is never considerable. They seem to approximate to a schlerenchymatous nature, but scarcely typical stereome. Though there is now much difference between the outer layer of the stem and that of the young root, that of the latter with age is strikingly angled and the layer immediately under the epidermis has the appearance of palisaded cells, both layers being devoid of chlorophyll. That this layer may have arisen by subsequent periclinal division is not improbable but was not definitely determined (Fig. 2).

The pith of the root is devoid of intercellular spaces as found in the cortex.

RHIZOME.

While there does not seem to be any considerable difference in structure between the emerged and the submersed part of the stem, there is considerable variation between these and that part of the plant axis which creeps and roots under the mud and may be designated as the rhizome. This is never proportionately as thick and to the naked eye or under a common lens has an internally different structure, being devoid of the central intercellular space, while the cortical spaces are fewer and smaller. (Fig. 6 and 7). The fibrovascular bundles are of the collateral open type and the xylem is strictly pentrach and endarch (Fig. 5 and 6). The cambium forms a rather perfect circle in cross section, developing interiorly somewhat bricklike cells in the interfascicular part (medullary rays), the cells inwards passing gradually into those of the pith. These cells are much in appearance like the cells of the bundle and are thickwalled. The ducts in each bundle are in several series instead of only one as in the rest of the stem. On the outer part of the phloem there are a few layers of schlerenchyma fibres and just outside in the cortex an occasional latex tube. The interfascicular cambium dips inwards but little.

THE STEM PROPER.

The differences between the stem proper and the creeping rhizome have been noted already. The intrastelar fundamental

tissue (medullary rays) are so far extended into the cortical region that the interfascicular cambium is nearer to the epidermis than the outermost portions of the phloem, in spite of the fact that the bundles are open (?) collateral of the typical kind and the xylem endarch pentarch. (Figs. 7 and 8). Several layers within the epidermis there appear at regular intervals perfectly straight vertical latex tubes and near the fibrovascular bundles a few are found at irregular intervals. The xylem is wedge shaped and has outside of it oval strands of phloem, the latter with stereome in several layers on its outer margin. The protoxylem has the usual annular ducts which gradually pass into spiral and finally scalariform pitted, and the ducts in each bundle are all arranged in one line or series increasing in size outwards towards the surface of the plant. The centre of the stem or pith is occupied with a large hollow space.

LEAVES.

As already intimated there are two kinds of leaves present, the submersed and the emersed. The former are short petioled or nearly sessile and repeatedly palmately dissected into linear divisions which in structure are of the centric type. (Fig. 9). The epidermis which is scarcely differentiated except in size and lack of cellwall markings, bears chlorophyll like the rest of the mesophyll layers. Only the layers of cells immediately bordering on the vascular system are devoid of it. The cells of the mesophyll are polygonal in cross section and their sides are marked transversely with scalariform markings. (Fig. 10). The wood bundle is very simple and varies according to the distance the section is made from the petiole. Fig. 9 shows a cross section made of one of the divisions about the middle of the leaf, several ducts are present as also a latex tube as are phloem elements and wood parenchyma. The bundles of the larger and lower divisions are more typically open collateral (Fig. 11). Both xylem and phloem are rather well developed, the former rather more so than were expected in aquatic plants. The epidermis of the submersed leaves is of course totally devoid of stomata and the cells are somewhat longer than broad. (Fig. 12). The petiole of the aquatic leaf is rather more flattened than any of the divisions but it has only a single larger bundle not essentially different from the collateral bundle of the divisions. The phloem strand is rather extensive

in area and number of elements. (Fig. 13). Calcium oxalate crystal aggregates are sometimes found.

EMERSED LEAVES.

The emersed leaves are oblong to lanceolate sharply or even laciniately toothed, and the intermediate ones between the aquatic more or less cleft or lobed. In structure they are bifacial. A surface view of the epidermis of the upper face is more regular or rather less irregular in cell structure (Fig. 14). The stomata are smaller than those of the lower face and orbicular whereas below they are slightly larger and oval. (Fig. 15). The chlorenchyma viewed from the lower face has many intercellular spaces (Fig. 16). It changes in shape gradually as it passes inwards to the two layers of palisade chlorenchyma. Nearer the midrib the palisade as well as the chlorenchyma pass gradually into rounder chlorophyllless cells on both faces. This is augmented by two layers of thick walled cells (Collenchyma) on the lower face and a wedge of similar stereome on the other face. Sectioned about the middle of the leaf there is a large central collateral bundle with several lateral ones in a semicircle (Figs. 17 and 18). In the petiole or at the base of the leaf these are coalesced into one large semicircular collateral bundle. Opposite to the phloem strand and immediately under the stereome on the lower face.

The characteristic features of the plant are the very simple wood bundles undergoing scarcely any secondary changes, as also the simplicity and regularity of all the structures. The roots are in the adult stage of the plant all adventitious and develop chlorophyll regularly as far as the stele. The stomata of both faces of the leaves are somewhat different and the extrastelar cells of the aquatic foliage exclusive of the epidermis have very characteristic scalariform markings. The aquatic foliage is as typically centric in type as the aerial leaves are bifacial.

EXPLANATION OF THE FIGURES.

Fig. 1.—Cross section of the young root of *Megalodonta Beckii*. (a) cortical intercellular spaces, (b) smaller spaces, (c) endodermis, (d) pericycle, (e) phloem (leptome), (f) xylem (hadrome), (g) pith, (h) latex tube.

Fig. 2. Cross section of the epidermis (ep) and hypodermis (hy) of an older root. (co) cortical chlorenchyma.

Fig. 3. Structure of a latex tube in an older root showing the arrangement of the secreting cells.

Fig. 4. Longitudinal section through the central part of an older root. (*a*) epidermis, (*b*) hypodermis, (*c*) cortical parenchyma with chlorophyll, (*d*) intercellular space, (*e*) extrastelar fundamental tissue the outer cells with chlorophyll, (*f*) endodermis, (*g*) pericycle, (*h*) secretion cells with a latex tube between them, (*i*) phloem, (*l*) wood parenchyma between the protoxylem and inner metaxylem.

Fig. 5. Cross section of a section of the stele of the rhizome. (*sp*) cortical intercellular space, (*co*) cortex cells, (*la*) latex tube, (*st*) stereome outside of the phloem of the fibrovascular bundle (mestome), (*cu*) Cambium, (*pi*) pith.

Fig. 6. Cross section showing the arrangement of the bundles in the stem of the same. The xylem is endarch pentarch.

Fig. 7. Cross section of the stem (floating, showing the arrangement of the bundles. Figs. 6 and 7 diagramatic and magnified about 18 diameters.)

Fig. 8.—Cross section of the floating equatic stem showing (*e*) epidermis with cortex beneath in which are the latex tubes (*la*) and the large intercellular spaces (*sp*) farther in the stele with the collateral bundles and the outwardly bulging pith (Medullary rays) (*m*), the central pith (*pi*), (*xy*¹) the protoxylem and (*xy*²) the mataxylem.

Fig. 9. Cross section of medium sized division of the aquatic leaf a little above the middle, showing the outer layer of epidermis with chlorophyll and the inner mesophyll also with chlorophyll. In the centre is the single fibrovascular bundle with a few xylem and phloem elements also a latex tube.

Fig. 10. One of the larger mesophyll cells of the above teased out to show markings of the cell wall.

Fig. 11. Single fibrovascular bundle of a larger division near the base of petiole. (*ph*) phloem and (*xy*) xylem. (*wp*) wood parenchyma, and (*me*) mesophyll.

Fig. 12. View of the epidermis of the aquatic leaf divisions.

Fig. 13. Cross section of the bundle of the aquatic leaf petiole with bundle of (*xy*) xylem and (*ph*) phloem, (*gl*) latex tube, (*cr*) crystal aggregate of calcium oxalate.

Fig. 14. Epidermis of the upper face of the aerial leaf with stomata.

Fig. 15. Epidermis of the lower face of the aerial leaf showing stomata.

Fig. 16. View of the pneumatic tissue under the epidermis of the lower face of the emersed leaf.

Fig. 17. Cross section of the middle part of an aerial leaf at the midrib (*ep*) lower epidermis with collenchyma or thick angled cells within it, (*c*), (*co*) fundamental tissue, (*ph*) phloem and (*xy*) xylem of the collateral bundles, (*pl*) modified palisade chlorenchyma.

Fig. 18. Cross section of an emersed leaf showing the arrangement of (*ep*) the lower epidermis, (*chl*) pneumatic chlorenchyma, (*pa*) palisade chlorenchyma, (*st*) stomata.

Scale of all the drawings: one division equals 12.5 microns.

NEW PLANTS FROM NORTH DAKOTA—XII.

BY J. LUNELL.

Dodecatheon thornense sp. nov.

Margines loborum calycis hyalini. Segmenta corollae 12-14 mm. longa, 3 mm. lata, rectangularia vel aliquantulum spatulata, obtusa, pallide usque saturate rosea, linea obscure rosea partem non divisam proxima. Haec pars lineam albam angustam exteriorem habet, deinde cum annulo purpureo fluctuoso inter basin segmentorum et tubum stamineum interjecto flava fit. Filamenta conjuncta 2 mm. longa. Antherae tubo filamentorum duplo longiores, tergo saturate rubrae usque atropurpureae, lateribus albidae.

Calyx lobes hyaline margined. Segments of the corolla 12-14 mm. long, 3 mm. wide, rectangular or somewhat spatulate, obtuse, varying from a pale to a deep rich rose color, with a dark rose line nearest to the undivided part; this has a white, narrow outer line, then becomes yellow, with a narrow, scalloped ring of deep purple midways between the base of the segments and the filament tube. United filaments 2 mm. long. Anthers twice as long as the tube of filaments, deep red to black-purple on the back, with whitish sides. For the description of the other parts of the plant read page 146, vol. III of this journal (October 1913).

This plant was collected in flower on June 10, 1914, by the writer at Thorne, N. Dakota. The leaves were considerably infected by a fungus, *Nigredo Polemonii* (Peck) Arth. I.

The characters segregating it from its ally, *D. pauciflorum* (Durand) Greene, are: segments of the corolla are of a pale to deep rich, rose color, in drying changed to lilac; flowers 10-16, united filaments are 2 mm. long; anthers are twice as long as the stamen tube; and the leaves differ (l. c. p. 146). *D. pauciflorum* seems to have lilac colored corolla segments also in the fresh plant, has the united filaments at least 3 mm. long, the anthers less than twice as long as the stamen tube, the flowers are few, and the leaves differ (l. c. p. 146).

This description has been added because only the fruiting plant was the available material for study in writing the paper of October 1913.

Laciniaria scariosa uniflora var. nov.

Apex caulis calathium solitarium gerens. Planta 1-2 dm. alta.

Stem 1-2 dm. high, with one single calathium. Leaves often arranged as in var. *supereminens*, or var. *basilaris* (vide Vol. II. p. 92 of this journal).

Collected by the writer on August 25, 1914, at Leeds, Benson County, where it is met occasionally on level plains.

Aster Kumleinii oliganthemos var. nov.

Planta decimetralis, plerumque uniflora, parva.

Plant 1 dm. high, usually carrying only one flower, this small, like the whole plant, which is one or few stemmed, few-branched or simple.

Collected by the writer on high hills bordering James River, at Jamestown, Stutsman County, August 24, 1913.

Erigeron tardus sp. nov.

Caules solitarii usque plures, 3-4.5 dm. alti, 3-usque 6-capitati, pubescentia brevi appressa vestiti, usque inflorescentiam stricti, dein aequae atque S curvati. Folia demum glabrata, denticulata, caulina superiora linearia, inferiora anguste lanceolata, radicalia late lanceolata, in petiolos longos alatos sensim reducta, 10-15 cm. longa. Capitula 3-4 cm. diametro (radiis albis latis inclusis).

Stems 1 or more, 3-4.5 dm. high, with 3 to 6 heads, having a short appressed pubescence, straight up to the inflorescence then bent like an S. Leaves at length glabrate, denticulate, on the upper part of the stem linear, on the lower part of the stem narrowly lanceolate; basal leaves broadly lanceolate, gradually narrowed into long, winged petioles, 10-15 cm. long. Heads 3-4 cm. in diameter (including the broad, white rays).

Distinguished from *E. procerus* and *E. anodentus* by its broad, acuminate, glabrate leaves and its appearance during the latest part of July, which is a long time since these allies have passed flowering.

Collected by the writer on a sunny roadside in York Township of Benson County, northwest of Leeds, July 26, 1913.

This group of daisies seems to be, under favorable conditions.

capable of a prodigious development. I have of *E. procerus* one plant, bearing nine stems and thirty flowering heads!

***Chenopodium virgatum* sp. nov.**

Caulis 9-11 dm. altus, erectus, virgatus, ramis brevibus, gracilibus, fastigiatis 4-20 cm. longis, de basi sursum florentibus vestitus, pulverulentus, striato-angulatus. Folia flavido-viridia, rhombico-ovata, tenuiora sed firma, dentibus minus variabilibus angulato-dentata, hastata, superne glabrata, subtus pulverulenta, gracilius petiolata, prope basim distincte 3-nervata. Flores in racemos vel spicas longas densasque, in paniculum amplum confertum collocatos dispositi. Perianthus pulverulentus flavidofuscus (maturus saltem), lobis eus leviter cristatis, scarioso-marginatis, diffusis, dimidium tantum utriculorum operientibus. Pericarpus opacus, leviter pulverulentus. Semen atrum, nitens, 1.25-1.5 mm. diametro, pericarpo firmissime adherens.

Stem 9-11 dm. high, erect, virgate, with short, slender, fastigiate branches, flowering from the base upwards, 4-20 cm. long; pulverulent, striate-angled. Leaves yellowish-green, rhombico-ovate, rather thin but firm, angulate-toothed, with the teeth of variable size, hastate or nearly so, glabrate above, pulverulent beneath, on slender petioles, distinctly 3-nerved at the base. Flowers in long and dense cluster or spikes, arranged in a large and close panicle. Perianth pulverulent, yellowish-brown (at least when mature), its lobes lightly crested, scarious margined, spreading, long enough to cover only the half of the utricle. Pericarp dusky, pulverulent. Seed black, shining, 1.25-1.5 mm. in diameter, very firmly adherent to the pericarp.

Collected by the writer on August 23, 1913 at Bismarck, Burleigh County, on the banks of the Missouri.

***Chenopodium virgatum* var. *junceum* var. nov.**

Graciliores etiam rami; flores in spicis angustioribus, nonnihil interuptis; folia integra, lanceato-linearia.

Still more slender branched, with narrower, somewhat interrupted flower-clusters; leaves entire, lance-linear.

Collected by the writer on the same date and place as the type, though they were not intermingled.

Leeds, North Dakota.

NOTES ON OUR LOCAL PLANTS.—IX.

BY J. A. NIEUWLAND.

Family 70. **PODOPHYLLEAE** DC., Syst. II, p. 31, 32, (1821).

Podophyllaceae Bartling, Ord. p. 251, (1831).

Subfamily Podophyllieae.

ANAPODOPHYLLUM Tour., Els. p. 204, (1694), I. R. H. p. 259 (1700) also Moench Meth., p. 227 (1794). *Podophyllum* Linn. Syst. (1735) Gen. p. 151 (1737) p. 223 (1755).

Anapodophyllum peltatum (Linn.) Moench, l. c.

Podophyllum peltatum Linn. Sp. Pl. p. 505 (1758).

Lake Maxinkuckee (H. W. Clarke) No. 1942 Notre Dame. Common and abundant throughout the whole region.

Subfamily Caulophyllieae.

CAULOPHYLLUM L. C. Richard in Michx. Fl. Bor. Am. I 204 (1803).

Caulophyllum thalictroides (Linn.) L. C. Rich., l. c.

Leontice thalictroides Linn. Sp. Pl., p. 312 (1753).

No. 2703 Rum Village, South of South Bend, Ind., Laporte Co. (Deam). Rather common and quite abundant in moist woods throughout the region. Found in Cass, Berrien, Lake, Laporte, Marshall, Elkhart and Van Buren Cos.

Family 71. **BERBERIDEAE** Vent., Tab., III, p. 83 (1799).

Berberidaceae T. and G. N. Am. Fl., p. 49 (1839).

BERBERIS Cuba, Hort. Sanit. (15th Cent.), also Jacob de Manliis in Brunfels Herb. Viv. Ic. p. 174 (1531), Tour., Els. p. 487 (1694), p. 614 (1700). *Ambiberberis* Galen (?) *Amirbaris*, Avicenna (?) *Oxyacanthos* Dioscorides (?) *Crespinus* Matthioli, Ruellius, Tragus, Fuchs. *Berberis* Dodonaeus (1557) Turner, Gesner, Lacuna, Lonicer, Lobelius, Castor Durante, Cusa, Rauwolff, Camerarius, etc. *Oxyacantha* Ruellius but not Diosc. tests C. Bauhin Pinax, p. 454 (1623).

Berberis vulgaris Bellonius, Cult., (1553). also Clusius. *Berberis dumetorum* Tour., Els. l. c. *Berberis officinarum* Ruellius Diosc., p. 77 (1547). *Berberis vulgaris* Linn. Sp. Pl., p. 330 (1753).

The cultivated variety with purplish leaves was found to

have escaped in the Rum Village woods a considerable distance from any habitation. It was probably disseminated from seed. It was also found along the Pere Marquette R. R. south of St. Joseph, Mich. In the latter case it probably came from an adjoining park or grave yard.

No. 2134 Notre Dame also 7509, 906.

Berberis canadensis Miller Gard. Dict., Ed. 8.

A specimen was found about 20 years ago near the bank of the St. Joseph River at the Four Mile Bridge. The plant has since disappeared.

Berberis Thunbergii DC., Syst., II, p. 9 (1821).

The plant shows a tendency to escape from cultivation at Notre Dame and sows itself and spreads in moist and shady locations. It is at least as persistent an escape as *Philadelphus coronarius*.

Family 72. **MENISPERMACEAE** DC. Prod., I, p. 83 (1824).

MENISPERMUM Tour., Acad. Reg., 237 (1705), also Dill., Gen., p. 150 (1719). Linn., Gen. p. 107 (1737), p. 158 (1754). Syst. (1735).

Menispermum canadens Linn., Sp. Pl., p. 34 (1753).

No. 2172 St. Mary's, Notre Dame, Ind., also 2167½. Found throughout the region.

Family 73. **LAURINEAE** Vent., Tabl. II, 247 (1799).

Lauraceae Lindley Nat. Syst., Ed. 2, p. 535.

SASSAFRAS Monardes (1580), also Castor Durante (1685) C. and J. Bauhin, Gerard, Ray, Muntingius, Plunkett, Caesalpinus De Plantis, p. 418 (1583), *Sassafras* Trew, Herb. Blackw., 267, (1757). *Euosmus* Nuttall, Gen., p. 258 (1808).

Sassafras variifolium (Salisb) Kuntze Rev. Gen. Pl., p. 574 (1891).

Laurus variifolia Salis. Prod., p. 304 (1796), *Sassafras officinale* Nees and Eberm., Hand. Med. Pharm. Bot., II, p. 418 (1831). *Laurus Sassafras* Linn., Sp. Pl., p. 371 (1753).

Sassafras albida var. **glauca** Nov. var.

Sassafras albida Nuttall, l. c. segregate.

Planta *Sassafras albidæ* Nuttallii similis sed arbor magna cum foliis inferiore facie pervenosis et cum arbor maturus sit integris obtusis ovatis.

This plant is indeed so very different from the typical pubescent Red Sassafras that it seems a wonder to us that Nuttall's plant has not been recognized. The twigs at first but slightly pubescent become bluish white glaucous later without the slightest trace of pubescence. The real *Sassafras variifolium* is a plant whose twigs are permanently tawny or brown tomentulose. The leaves in older specimens are broad and two lobed. I have found our western white Sassafras as a large tree and typically without any lobed leaves when it has attained maturity. I have watched several trees for a number of years and have never seen a single lobed leaf on these, though in widely separated localities. Usually there are a few lobed leaves and these are the more numerous the younger the specimens. Our western plants are somewhat more treelike than those described by Nuttall and the leaves are thicker and more veiny, the twigs more angled and glaucous. On these few characters it is perhaps sufficient to characterize a new variety as distinct from *S. albidula*. Type No. 18000 from Rum Village south of South Bend, Ind. in the University Herbarium.

In studying the plants of the east in the field as also from specimens in our herbarium it would seem that there are several widely different varieties at least along the Atlantic Seaboard. I have not found typical *Sassafras variifolium* in our region.

Reported as *Sassafras variifolium* (?) from the counties are: Millers, Lake Co. (Deam) Pine, Ind. Higdon and Raddin, Lake Maxinkuckee (H. W. Clarke) Laporte Co. (Deam) also Starke Co. (?) Specimens of the variety in our herbarium are No. 971, 2222, Notre Dame, Chain Lake, St. Joseph Co. No. 9442, Mineral Springs, Porter Co. Nos. 11057, 10272. No. 2004 Notre Dame, (Powers).

BENZOIN Boerhaave, Index Alter Plantar., II, p. 259 (1727), also Ludwig Def. Gen. Pl., (1737), Fabricius, Enum. Pl. Hort. Helmst., (1763), *Lindera* Thunberg Diss. III, p. (1783) not *Lindera* Adanson, (1763).

Benzoin aestivale (Linn.) Nees, Syst. Laur. p. 495 (1836).

Laurus Benzoin Linn., Sp. Pl., p. 370 (1753) *Lindera Benzoin* Blume, Mus. Bot. Lugd., I, p. 324 (1857).

Porter, Starke Co. (Deam) Millers and Casella (Higdon and Raddin) Lake Maxinkuckee (H. W. Clarke), Nos. 11458 Rum Village, South Bend, Ind. 9368 Notre Dame, Ind.

ORDER 26. RHOEDALES.

Bartling, Ord. Nat. Pl., p. 254 (1831) *Papaverales* Britton, Man. p. 437 (1901).

Family 74. **PAPAVERACEAE** B. Jussieu, Hort. Trian. A. Jussieu, Gen' (1789).

PAPAVER Vergil, Georg. I, 212, IV, 131, 545, Aen, I, 78.

Also Columella X, 314, Pliny, XX, 76, *Mekon* of the Greeks, Homer, 306, Nicander, Dioscorides, Theophrastus. Theocritus *Papaver* of all the pre-Linnaean authors without exception, *Papaver* Tour., Els. p. 203 (1694), I. R. H., 234, Linn., Syst. (1735), Gen. p. 150, (1737), p. 224 (1755).

Papavex cereale Vergil, Columella l. c.

Papaver erraticum Pliny, l. c. also Matthioli, Cordus, Gesner, Lenicer, Dodonaeus, Thalius, Castor Durante, Tabernaemontanus, Fuchs, etc. *Papaver Rhocas* Lobelius, Gerard, Dodonaeus (1557) Linnaeus Sp. Pl., p. 507 (1753) *Papaver erraticum* or *rubeum* Brunfels Herb. Viv. Ic., II, 28 (1532) *Mekon Rhoias* Theophrastus IX, 13.

The plant is found escaped from gardens though not found as commonly as a weed in fields as in Europe. Found in Berrien and St. Joseph Cos.

Papaver somniferum Vergil, Aen., IV, 131.

Papaver sativum Pliny, XX, 13, Columella, XI, 3, *Papaver nigrum* Brunfels, *Papaver somniferum* Linn., Sp. Pl., p. 508 (1753), *Papaver album* Pliny, Tragus Dodonaeus. *Papaver candidum* Lobelius, Caesalpinus, *Papaver somniferum* Matthioli, Dodonaeus, Tabernaemontanus.

The plant is not as commonly escaped as the preceding but I have found it in St. Joseph Co.

STYLOPHORUM Nuttall Gen., II, p. 7 (1818).

Stylophorum diphyllum (Michx.) Nutt. l. c.

Chelidonium diphyllum Michx. Fl. Bor. Am., I, 309 (1803), *Meconopsis diphylla* DC. Syst., II, p. 88 (1821).

Berry Lake, Pine Station, Millers (Higdon and Raddin). Nos. 500, 532, Rum Village, South Bend, Ind.

ECHTRUS Loureiro, Fl. Cochin Ch., p. 344 (1790).

Argemone Tour., Els. p. 204 (1694) I. R. H., p. 532 (1700). Also Linn., Syst. (1735) Gen. p. 150 (1737) p. 225 (1755) Hort.

Cliff., p. 209 (1737) not *Argemone* Tragus Lacuna, Lonicer, or of the older writers = species of *Papaver*.

Echtrus mexicanus (Teux).

Argemone mexicana Tour. l. c. Linn. Sp. Pl., p. 508 (1753), *Echtrus trivialis* Tour., l. c.

No. 11183 Webster's Station North of Notre Dame, in a field of clover.

BELHARNOSIA Sarracen ex Adanson Fam. p. 43. (1763).

Sanguinaria Dillenius Hort., Eltham., p. 252 (1732) Linn., Syst. (1735) Gen. p. 150 (1737), p. 223 (1755), not *Sanguinaria* Pliny and the pre-Linnaean writers, nor Tragus, etc. = *Panicum sanguinale* Linn. or some grass.

Belharnosia canadensis (Linn.).

Sanguinaria canadensis Linn., Sp. Pl. p. 505 (1753).

St. Joseph Co. (Rothert), Laporte Co. (Deam), Lake Maxinkuckee (H. W. Clarke), Nos. 2005, 9424, 2008, Notre Dame, Ind. 7705 3 miles north of Notre Dame, 11176 Rum Village south of South Bend, Ind., 1435 Notre Dame (W. W. Johnson), Nos. 826 North Liberty, St. Joseph Co., 654 Notre Dame have the leaves and general characters of *B. (S.) mesochora* (Greene).

CHELIDONIUM Theophrastus Hist., VII, 14.

Theocritus Idyl: XIII, 40, Nicander Ther. 857. Dioscorides Mat. Med., II, 211. Pliny XXV, 50, also nearly all of the older writers. *Chelidonium* Tour. Els. p. 197 (1694). *Hirundinaria* Theodore Gaza, (1529) also Lobelius.

Chelidonium majus Ruellius, Diosc. p. 207 (1547), also Gerard (1596 and of most of the pre-Linnaeans! *Chelidonium vulgare* Clusius, *Hirundinaria major* Lobelius. *Chelidonium majus* Aguilera, Matthioli, Fuchs, Turner, Lacuna, Cordus, Gesner, Costor Durante, Caesalpinus, Lobelius, Thalius, Tabernaemontanus, Gerard, Dodonaeus, etc. also Linn., Sp. Pl. p. 505 (1753).

Found at St. Joseph, Mich. along the Pere Marquette R. R. No. 61030 along the St. Joseph River at Notre Dame on the high sandy bank in several places some distance apart.

Family 75. **FUMARIACEAE** DC. Syst., II, p. 105 (1821).

Subfamily Fumariaceae.

CAPNORCHIS Boerhaave Index Alter Planter. I, p. 309 (1727)

Bicuculla Adanson, Fam. II. App. p. 23 (1163), *Dielytra* Boreckl. Roem., Arch. I, p. 46 (1797), *Dicentra* Bernh. Linnaea VIII, 468 (1833), *Cucullaria* Jussieu Act. Par. (1743).

Capnorchis canadensis (Goldie).

Corydalis canadensis Goldie Edinb. Phil. Jr. VI, 329 (1822)

Dielytra canadensis DC. & Prod. I, p. 126 (1824), *Dicentra canadensis* Walp., Rep., I, p. 128 (1842), *Bicuculla canadensis* Millspaugh, Bull. W. Va. Agric. Exp. Sta., II, p. 327 (1892).

Nos. 7708 Notre Dame, Ind., (W. W. Johnson), 7702 Rum Village, South Bend, Ind. 92171, Twin Springs, Mich. (Berrien Co.).

Capnorchis Cucullaria (Linn.)

Diclytra Cucullaria DC. Syst. Veg. II, 608 (1821), *Diclytra Cucullaria* Torrey Fl. N. Aim. I, p. 66 (1838), *Dicentra Cucullaria* Torrey, Fl. N. Y., I, p. 451 (1843), *Bicuculla Cucullaria* Mills. l. c.

Lake Maxinkuckee (H. W. Clarke) Nos. 451, 2486, Rum Village, South Bend. 7700 2 miles north of Notre Dame.

Nos. 7702 and 7700 contain two specimens that look superficially somewhat like *C. canadensis* but a closer examination of them reveals the following. The spurs though short are not turned inwards to the pedicel but divaricate and blunt. The sepals are short and of the same shape as those of *C. Cucullaria* though but about one-fourth as large whereas the shape of these of typical *C. canadensis* are lanceolate. The underground parts are like those of the former. The plant seems intermediate between the two typical plants and might possibly be a hybrid as these sometimes bloom at about the same time in our region, belated flowers of *C. Cucullaria* being almost coetaneous.

Subfamily, Corydalieae.

CORYDALIS Castor Durante (1585).

Capnoides Tour., Els., p. 335 (1695), I. R. H., p. 423 (1700)
Neckeria Scepoli Introd. p. 313 (1777), *Corydalis* Vent., also Medicus Phil. Bot., p. 96 (1789), *Pseudo-fumaria* Rivinus. (1666)
Capnoides Adans., Fam. Pl. p. 431 (1763).

Corydalis sempervirens Pers. Syn. II, p. 269 (1807).

Capnoides sempervirens Borek., Roem., Arch., I. p. 44 (1797).
pt. I. *Corydalis glauca* Parsh Fl. Sept., p. 463 (1814) *Fumaria sempervirens* Linn., Sp. Pl. p. 700 (1753).

Lake Co. (Hill), Porter Co. (Cowles).

Corydalis flavula Raf., DC., Prod. I. p. 120 (1824).

Capnoides flavulum Kuntze Rev. Gen., p. 14 (1891).

Nos. 1916, 1838, 9222 Rum Village, south of South Bend, Ind.

(To be continued.)

A NEW ANTENNARIA.

BY B. F. BUSH.

Antennaria ampla n. sp. Folia caulium sterilium 4-5 cm. lata, 5-10 cm. longa, (petiolos tenues includentia), primo villosotomentosa facie superiore cito glabra, inferiore quidem dense flaveo-tomentosa. Planta fertilis caulibus 3-4 dm. altis, tenuibus, laxe tomentosis cum foliis 8-12 oblongis, acutis, 1-3 cm. longis. Capitula pauca, minuscula, subsessilia in summitate pedunculi insita. Bracteae involucri permultae in 2-3 seriebus; interiores vero longiores, angustiores et acutae, exteriores quidem apice denticulato, et ambae ad apicem scariosae. Planta staminea caulibus .5-1.5 dm. alta laxe tomentosa, cum 5-8 foliis anguste oblongis acutis. Capitula pauca in summitate pedunculi capitata; bracteis paucis in 2-3 seriebus, exterioribus oblongis, et brevioribus quam in interioribus, quae late oblongae aliquantulum dilatatae, majores, et ad apicem denticulatae singulariterque scariosae sunt. Pappus ad apicem aliquantulum dilatatus et serratus.

Antennaria ampla n. sp. Leaves of the sterile shoots ample, 4-5 cm. broad, 5-10 cm. long, including the slender petioles, at first villous-tomentose above, soon glabrous, below densely yellowish-tomentose. Fertile plants with stems 3-4 dm. tall, slender, loosely tomentose, with 8-12 oblong, pointed leaves, 1-3 cm. long; heads several, rather small, subsessile at the top of the stems; involucreal scales numerous, in 2 or 3 series, the inner longer, narrower, and acute, the outer broader, shorter, and denticulate at apex, all showily scarious at tips; male plants with stems $1\frac{1}{2}$ -1 $\frac{1}{2}$ dm. tall, loosely tomentose, with 5-8 narrowly-oblong pointed leaves; heads several, in a capitate cluster at top of stems; involucreal scales few, in 2 or 3 series, the outer oblong, shorter than the inner, the inner broadly oblong, somewhat dilated, larger than the outer, denticulate at apex, the upper portion showily scarious; pappus-tips slightly dilated, serrate. This species was discovered by myself, in company with Misses Martha and Pearl Julian, and my two daughters, May and Hazel, on May 22, 1914, No. 7119.

The precise locality where this species was found is about 2 miles east of Atherton, Missouri, and near the old postoffice of Blue Mills, now called Twyman, in honor of Dr. Twyman's

family, who have long resided there. The special habitat of the species, the wooded crowns of several high hills along the Missouri River at this place. The fertile and sterile plants were growing together, the males by the hundred, the fertile plants rather scarce, therein differing from all the other broad-leaved species of this region, the sterile plants of which have never been seen.

This plant is distinct from all the broad-leaved species known to me to occur in this region, as shown by the following key:

Scales of the fertile involucre broad, with broad showy tips.

Pappus-tips in male narrow, serrate....*A. occidentalis*.

Pappus-tips in male wide, crenate.....*A. calophylla*.

Scales of the outer involucre narrow

Scales not showily scarious-tipped.

Scales few, subequal; pappus-tips in male

suberrate*A. umbellata*.

Scales many, well-imbricated; pappus-tips in

male crenate.....*A. mesochora*.

Scales showily scarious-tipped, numerous, un-

equal, in several series; pappus-tips in male

narrow, serrate.....*A. ampla*...

NOTES ON HEMEROCALLIS.

BY N. M. GRIER.

The writer while comparing specimens of *Hemerocallis fulva* and *flava* during the past summer, was led to note peculiarities of these two species, which do not seem to be generally known to botanists. It will be convenient to introduce excerpts from our common manuals.

Gray's Manual.¹ *Hemerocallis* L. Day Lily.

".... Capsule at first rather fleshy, 3-angled, loculicidally 3-valved, with several black spherical seeds in each cell...."

H. fulva—(Common D.). . . Roadsides, escaped from gardens. Introduced from Europe.

Britton and Brown.²

".... Ovary oblong, 3-celled, ovules numerous in each cavity...."

¹ Gray's New Manual, 7th edition.

² Britton and Brown "Illustrated Flora of U. S. and Canada."

1. *H. fulva*—... Found New Brunswick to Virginia to Tennessee. In meadows and by streams. Europe and Asia. Escaped from cultivation.

2. *H. flava*—yellow day lily, with yellow flowers, occasionally found near old gardens, and on roadsides.

It will be noted from the above, that in Gray but one species of *Heimerocallis* is given—the more common one. Britton and Brown, however, add to this *flava* as well as other plants closely allied. Since it seems that neither *fulva* nor *flava* were the original type species of this genus, the writer has noted that at least within the geographical range to be mentioned, capsules, which one might infer to present, are wanting in *H. fulva*. Referring to Knuth,¹ this is found to be the normal condition in Europe. A paragraph from this work may be of interest.

"According to Sprengel's assertion, which Kerner confirms, the plant, (*Heimerocallis fulva*), never sets fruit here, so it is highly probable that in its original home in east Asia, it is pollinated by such insects as are not to be found in Europe. Maximowicz states that artificial pollination is also ineffective, the flowers do not produce mature seeds in Europe. Sprengel, who pollinated the flowers artificially with their own pollen, also obtained no fruits, etc." There then follows a description of the mechanism producing this condition. Mr. W. G. Gibson of Avalon, Pa., who is an experienced horticulturist, and who has observed this species well within the limits as described by Britton and Brown, reports that he has never seen the plant in fruiting condition. It is not improbable therefore that such a condition as above described prevails in the American form also. Granted that this is the case, descriptions of *H. fulva* as ordinarily given tend to be somewhat misleading in the respect discussed—an error which will be found to be present in many of the popular "Wild Flowers" books. *H. flava*, less known in this country and also self-sterile, is thus more typical of the genus. It is noted that in some 63 specimens of *H. flava* examined, the greatest number of seeds in any valve was 7, some of the valves being devoid of these, or containing a minimum number.

The writer is able to add *H. flava* to the flora of Pennsylvania Porter not recording it. *H. fulva*, as an escape is distributed over

¹ "Knuth's Handbook of Flower Pollination." Trans. J. R. A. Davis, Vol. III., p. 462.

² "Flora of Pennsylvania."—Porter, C. H.

the greater part of the upper Ohio Valley, growing principally upon earlier glacial deposits. *H. flava*, although as yet seen only in cultivation by the writer, may then be expected to be found at any time as an escape in the locality given. Dr. O. E. Jennings relates of collecting this species in Ohio, although it is not listed by Schaffner.¹

Central High School, St. Louis, Mo.

COMPARATIVE MIGRATION OF OUR BIRDS IN AUTUMN.

BY BROTHER ALPHONSUS, C. S. C.

Between the earliest and latest date of the Cowbird there were 58 days, which would indicate that either the writer missed the date in one year by a very wide mark or that the Cowbird can be very irregular in its time of migrating. The date for 1911 was 23 days earlier than in 1912 and 28 days earlier than in 1913. The two regular dates were in October, which is likely the usual time of migrating.

In 1909 the Red-winged Blackbird was observed last on August 26 and in 1911 no record was made for autumn. These facts show that the species is exceedingly rare at this season of the year, and will be found only by a fortunate observer. The two dates in November for 1912 and 1913, which are two weeks apart, gives us the probable time of departure as well as the difference of one year from another.

The Hermit Thrush was very regular in its arrival from the

¹ "Catalogue of Ohio Vascular Plants." Schaffner, J. H. Ohio State University Bulletin, Vol. 28, No. 224.

Linnaeus. (Species Plantarum, 1753, p. 324). admitted the now recognized species *H. flava*, (*flavus*), and *H. fulva*, (*fulvus*), as varieties of *H. Lilio Asphodelus* both forming a composite type species for the genus. Dr. J. A. Nieuwland has pointed out, (AMERICAN MIDLAND NATURALIST, Vol. II., p. 106), and also in a recent letter to the writer, that an interpretation of Linnaeus consistent with the rules of Rochester and Vienna, makes the form recognized as *H. flava* the type of the genus, as it was by examination of Pre-Linnaean authors. It is evident from the above therefore, that the valid name according to the nomenclature of *H. flava*, is really *H. Lilio Asphodelus*.

north for three years, but in 1912 it was not seen until Oct. 13, which was the only record for the species that autumn. (When two dates are given for any species, that means the first was the date of arrival from the north). It will be noted that the Hermit Thrush was regular for two years in the time of its departure, but 8 and 9 days earlier and 9 and 10 days later than the regular dates in the other two years—18 days being the difference between the earliest and the latest date of departure.

The Kingbird was regular in its time of leaving except in 1912, when it departed on August 22. This date was 15 days earlier than the latest date, which was on Sept. 6. Barring the one early date, this species left regularly in the first week of September.

The Hummingbird is seldom recorded by the writer at any season of the year, and this fact will probably explain the marked difference in the dates of migration for the species. Only two dates—in September—can be called regular, the third—in August—being 23 days earlier than the latest date. The August date must have been far from the true time of departure, yet it was obtained from a fairly diligent search.

Considerable disparity is shown in one of the dates of the Vesper Sparrow—Sept. 30, 1912. This date was 26 days later than the earliest date. No record was made in 1913, which, with the single late date in 1912, would indicate that it is difficult to determine the time of departure for this species. The regular dates are too early for this sparrow, which—being such an early spring migrant—must tarry with us as late as October.

In the Baltimore Oriole we have a species that shows the greatest regularity of any of our birds in the time of its autumn migration. Only 2 days between the earliest and the latest date, is the remarkable record for this species.

The Barn Swallow shows 18 days between to be the difference between its earliest and latest date of migration. The time between the third date—August 31—and the latest date—Sept. 6—the writer thinks indicates the true time of migration.

Only two dates were made for the Loggerhead Shrike—one in August and one in September—with the difference 24 days. This species is difficult to record, especially after the nesting season; and the single record for September is hardly sufficient to determine with satisfaction when the species migrates.

The four records of the Purple Martin are divided between August and September—the dates of each set being regular. There are 16 days between the earliest and latest dates, and 12 days separating the other records. From these figures we can see that this species may leave on dates that are 1 or 2 days apart or within a period that is a little less or a little more than a fortnight.

The three dates of the Yellow Palm Warbler place this species among the migrants that are regular in their time of leaving, two days being the greatest difference. But the same regularity is not observable in the two dates of arrival—12 days separating them.

The Bronzed Grackle presents a case of great disparity in its dates of migration, no fewer than 54 days intervening between the earliest and the latest dates. But such an early record as September 15 may be set aside in determining the true time of migration for this species; and the interval between Oct. 20 and Nov. 8—18 days—may be taken as the probable period in which this grackle usually departs.

The Warbling Vireo showed regularity in all of its dates except one, which was 10 days later than the earliest date. The Redstart was more regular still—two of the dates being identical and the others, 3 and 8 days later respectively. The Golden-crowned Kinglet must also be ranked among the regular arrivals in autumn—5 days making the longest interval; but there is less regularity in the time of departure.

A very curious case both of irregularity in migrating and of non-migration was that of the Red-headed Woodpecker. Between the earliest and the latest date there were 23 days; between the earliest and a later date there were 8 days. In 1913 the species did not migrate; but remained throughout both autumn and winter. A very interesting occurrence indeed was this non-migration of a species that left for three previous years in the month of September. What is the explanation? The winter proved a very mild one; and could the bird have known so long beforehand that the season would not be severe? I think the bird must have been able to determine this, but how I can not say.

Two species that showed marked regularity in three of their dates, but great disparity in one date, were the Myrtle Warbler and the Snowbird. The early arrival of the Snowbird on Sept. 4,

1913—was 13 days ahead of the earliest date of the other three years; while the Myrtle Warbler was 26 days earlier in 1911 than any other of its dates. Perhaps the early date of the Snowbird may be accounted for as the result of greater diligence on the part of the writer; but such an explanation would not be correct for the Myrtle Warbler. In 1911 this species was frequently seen after Sept. 11, which is 14 days earlier than the earliest date of any other year; and the characteristic call-note of the species always makes its presence practically certain.

In the Red-breasted Nuthatch we have a species that is not recorded often enough to ascertain its approximate date of migration. The records obtained show great disparity, with 52 days between the extreme dates.

When the Tree Sparrows first arrives from the north, the birds are neither numerous nor in song, and consequently may be overlooked unless the observer is both experienced and diligent. My records for the species fall into two sets—two in November and two in October, but I think that the latter dates may be taken as the more exact, and so in the fourth week of October the careful observer will be sure to find a few Tree Sparrows.

My records for the Robin do not give conclusive evidence about the correct time of migration for the species. Two dates fall close together and two others are almost five weeks apart. This great irregularity is likely due to the habit which the Robin has of moving about a good deal in autumn in search of fruit—wild or cultivated—for food.

The writer has usually omitted from his comparison those species for which he has but a single date, hoping that future observations will furnish a sufficient number of records for a comparison.

	1909	1911	1912	1913
Cowbird	Aug. 18	Sept. 18	Oct. 11	Oct. 16
Red-winged Blackbird	Aug. 26		Nov. 1	Nov. 15
Hermit Thrush	Aug. 29-Oct. 22	Aug. 30-Oct. 21	Oct. 13	Aug. 30-Nov. 1
Kingbird	Sept. 2	Sept. 3	Aug. 22	Sept. 6
Orchard Oriole	Sept. 3			
Hummingbird	Sept. 4	Sept. 27	Aug. 14	Sept. 20
Vesper Sparrow	Sept. 4	Sept. 6	Sept. 30	
Baltimore Oriole	Sept. 4	Sept. 3	Sept. 5	Sept. 4
Barn Swallow	Sept. 6		Aug. 19	Aug. 31
Loggerhead Shrike	Sept. 6		Aug. 12	

	1909	1911	1912	1913
Purple Martin	Sept. 8	Aug. 23	Sept. 5	Aug. 25
Long-billed Marsh Wren	Sept. 8			Aug. 28
Least Flycatcher *	Sept. 11	Aug. 22		Aug. 25-Sept. 26
Yellow Palm Warbler	Sept. 15-Oct. 15		Oct. 12	Sept. 27-Oct. 14
Bronzed Grackle	Sept. 15	Oct. 20	Nov. 8	Oct. 25
Warbling Vireo	Sept. 16	Sept. 27	Sept. 13	Sept. 15
Red-eyed Vireo	Sept. 17		Aug. 6	Sept. 3
Redstart	Sept. 20	Sept. 24	Sept. 20	Aug. 29-Sept. 28.
Maryland Yellowthroat	Sept. 21			Sept. 13
Cedarbird	Sept. 23	Sept. 10	Aug. 31	Sept. 11
Red-headed Woodpecker	Sept. 24	Sept. 1	Sept. 9	
Wood Pewee	Sept. 24	Sept. 10	Sept. 18	Sept. 28
Greater Yellowlegs	Sept. 24	Sept. 20	Oct. 25	Aug. 31
Brown Creeper	Sept. 25 arrival	Sept. 17 arrival		Sept. 13 arrival
Myrtle Warbler	Sept. 25-Oct. 1	Aug. 31-Oct. 29	Sept. 30-Oct. 27	Sept. 27-Nov. 6
Snowbird	Sept. 26 arrival	Sept. 17 arrival	Sept. 28 arrival	Sept. 4 arrival
Catbird	Sept. 26	Sept. 4	Sept. 18	Sept. 25
Indigo Bird	Sept. 26	Sept. 27	Sept. 22	Oct. 5
White-throated Sparrow	Sept. 28-Nov. 1	Sept. 27-Oct. 18	Sept. 26-Oct. 25	Sept. 15-Oct. 27
Red-breasted Nuthatch	Sept. 30	Sept. 4	Oct. 26	Sept. 20
Black-billed Cuckoo	Sept. 30			Sept. 14
Chimney Swift	Oct. 4	Oct. 7	Sept. 29	Sept. 24
Yellow-billed Cuckoo	Oct. 7	Sept. 16	Sept. 25	Sept. 24
Yellow-bellied Sapsucker	Oct. 4-10	Sept. 5	Oct. 3	Sept. 19-Oct. 11
Phoebe	Oct. 10	Oct. 17	Sept. 25-Oct. 4	Oct. 13
Brown Thrasher	Oct. 12	Sept. 20	Sept. 13	Oct. 9
Nighthawk	Oct. 13			Sept. 8
Kingfisher	Oct. 13	Oct. 25	Oct. 27	Nov. 14
House Wren	Oct. 16	Sept. 21	Oct. 8	Oct. 14
Bluebird	Oct. 21	Nov. 1	Nov. 8	Oct. 31
Fox Sparrow	Oct. 23			
Meadowlark	Oct. 28	Oct. 23	Oct. 15	Nov. 5
Towhee	Oct. 28	Nov. 8	Oct. 24	Nov. 2
Chipping Sparrow	Oct. 29	Oct. 12	Sept. 4	Oct. 17
Hell Diver	Oct. 30	Oct. 28	Oct. 16	
Killdeer	Nov. 1	Oct. 14	Oct. 21	Oct. 31
Robin	Nov. 4	Nov. 21	Oct. 27	Nov. 5
Tree Sparrow	Nov. 9 arrival	Nov. 15 arrival	Oct. 25 arrival	Oct. 21 arrival
Goldfinch	Nov. 16	Nov. 24	Nov. 19	Dec. 14
Flicker	Nov. 18	Oct. 16	Oct. 15	Oct. 11
Cardinal	Nov. 20	Nov. 8	Nov. 13	
Northern Shrike	Nov. 29 arrival		Nov. 25 arrival	
Alder Flycatcher	Aug. 22			Aug. 14
Black and White Warbler	Aug. 22			Aug. 29-Sept. 27
Yellow-bellied Flycatcher	Aug. 27			
Crested Flycatcher		Sept. 1	Sept. 13	Sept. 12
Pine Warbler		Sept. 24	Sept. 14	Sept. 11-Oct. 26

	1909	1911	1912	1913
Black-throated Green Warbler		Sept. 29	Sept. 17	Aug. 30-Oct. 11
Spotted Sandpiper		Oct. 3	Aug. 5	
Chickadee		Oct. 9 arrival	Oct. 25 arrival	Oct. 6 arrival
Winter Wren		Oct. 14-Nov. 4		
Mourning Dove		Oct. 15	Sept. 23	
Field Sparrow		Oct. 29	Oct. 16	Oct. 27
Canada Geese		Nov. 1	Nov. 18	Oct. 20
Song Sparrow	Nov. 8	Nov. 15	Dec. 15	Dec. 7
Yellow Warbler			Aug. 6	Aug. 3
Wilson Wargler			Aug. 31	
Whip-poor-will			Sept. 20	

Pages 311-332 published August 4, 1914.

ERRATA.

Page 138, line 6. Scratch:—Rachis folii et petioluli dense albido-tomentori, marginaliter saltem.

Page 144, last line:—panes read paene.

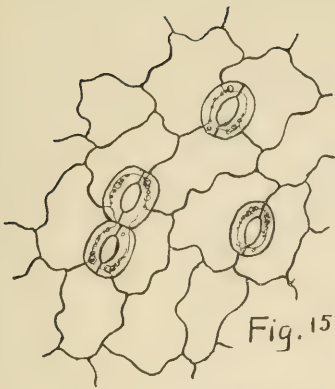


Fig. 15

One division = 12.5 μ .

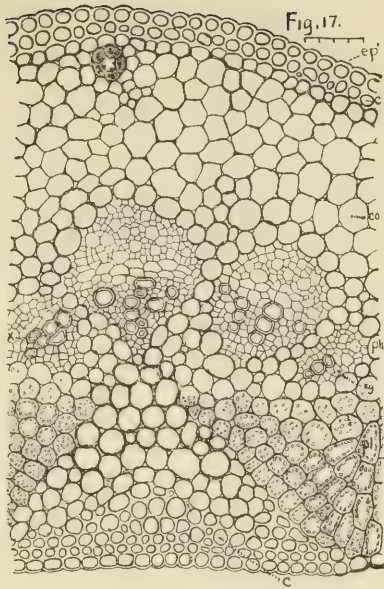
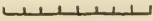


Fig. 17.



Fig. 16.



Fig. 14.

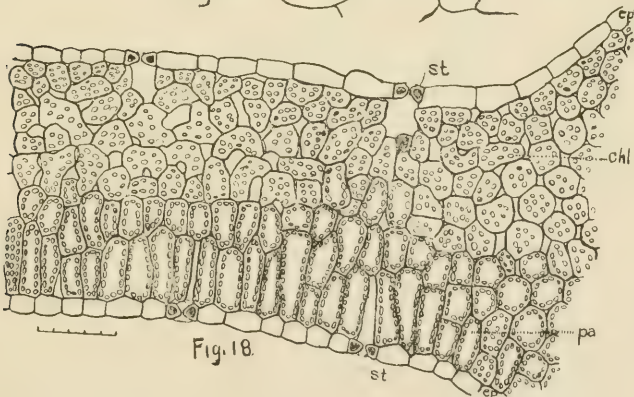


Fig. 18.

Microscopical Slides of Plants

For Schools and Teachers of Botany

¶ These mounts are illustrative of the principal plant groups showing life history and methods of reproduction, and are put up by the Glycerine, Venetian Turpentine, and Balsam methods. Filamentary forms of Algae a specialty. Limited amounts of alcoholic material properly fixed for histological study can be supplied as also live fresh water algae in season.

Slides of Algae, 20 cts. a piece, net

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INDEX

Abbotia	19	Admirabilis	280
palustris	19	peruana	280
Acalypha	233	Aesculus	229
Acer	181, 182	Aglitheis	104
barbatum	182	Agrostemma	290
floridanum	182	agrestis	290
grandidentatum	183	coronaria	292
hispidum	182	Githago	290
leucoderme	182	Aigeiros	222
Acetosa	236	candicans	223
minor	236	deltoides	222
repens	236	heterophyllos	222
tenuifolia	237	nigra	222
Acetosella	237	Aigilops	229
Acnida	279	Aizoaceae	281
tamariscina	279	Alaria	96
tuberculata	279	Alcali	277
Aconitum	171	Aletroideae	107
Acoron Discorides	47	Aletris	107
Acorum	7	farinosa	107
Diocordis	47	Algae, Some Littoral, of	
legitimum	47	Puget Sound	91
Acorus	47	Alisma	21
Calamus	47	aquatica	21
palustris	47	erecta	21
verus	47	Plantago	21
Actaea	326	Alismaceae	21
alba	326	Alnus	228
racemosa	326	incana	228
spicata var. alba	326	glutinosa	228
spicata var. rubra	326	hirsuta	228
Adenimesa	193	rugosa	228
Adicea	6, 234	serrulata	228
Deamii	7, 10	vulgaris	228
fontana	7	Alliaceae	104
Nieuwlandii	7, 10, 234	Allieae	104
opaca	7, 8, 10	Allionia	280
pumila	6, 7, 11	nyctaginea	280
Adike	234	Allium	105
Adlumia	174	canadense	105

- Allium cernuum*.....105
 stellatum.....105
 triccoccum.....105
 vineale.....105
Alsine.....282
 graminea.....282
 longifolia.....282
 longipes.....282
 media.....282
 minor.....282
 minima.....289
Alsineae.....282
Alsinaceae.....282
Alsinioideae.....282
Amaranthides.....153
Amaranthoideae.....278
Amaranthus.....278
 albus.....278
 blitoides.....278
 cristatus.....278
 graecizanus.....278
 hybridus.....278
 purpureus.....278
 retroflexus.....278
 spinosus.....278
 tamariscinus.....279
Amarantus.....278
Amarella theiantha var. *livida*...142
Ambrina ambrosioides.....275
 anthelmintica.....275
Amelanchier macrocarpa.....143
 alnifolia.....144
 oblongifolia.....144
Amentaceae.....226
Armeria.....297
Amerina.....223
Ammocallis.....150, 151
 rosea.....151
Amphiroa.....93
Aplectrum.....125
 spicatum.....125
Anacharis canadensis.....22
Andrachne.....281
Anemanthus.....322
Anemonanthaea...173, 174, 318, 322
 trifolia.....174
 quinquefolia...174
Anemone.....173, 322
 canadensis.....322
 cylindrica.....322
 Hepatica.....321
 pennsylvanica.....322
 quinquefolia.....322
 thalictroides.....288
 trifolia.....174
Anemonella thalictroides...288, 323
Anemonoides.....322
Angiospermae.....14
Anguina.....46
Anona triloba.....297
Anonaceae.....297
Antennaria.....352
 ampla.....352, 353
 angustiarum.....352
 calophylla.....353
 mesochora.....353
 occidentalis.....352
 umbellata.....353
Antennarias.....88
Anthaloea.....180
 polygama.....180
 rubella.....180
Anthericum.....111
Anychia.....279
 Baldwinii.....152
 canadensis.....279
 capillacea.....280
 dichotoma.....280
 hernarioides.....154
Anychiastrum.....154, 155
 Baldwinii.....152
 hernarioides.....154
 montanum.....155
 riparium.....155
Aphyllon.....157, 190
Apinus.....69
Aplectrum.....125
Aplilia.....187
Apocynum cannabinum.....54
 Carolini.....53
 cinereum.....56
 isophyllum.....56, 57
 tomentellum...55, 166
 tomentulosum.....166
Aquatile.....336

- Aquilegia 324, 325
 canadensis 325
 Aquileia 324
 Aquilina 325
 Arabis Douglassi 287
 rhomboidea var. *purpurea* 287
 Araceae 44
 Arales 44
 Arboreta, Forest 255
 Arenaria 289
 brevifolia 289
 lateriflora 289
 multicaulis 289
 rubra 290
 serpyllifolia 289
 Arethusa 121, 122
 ophioglossoides 121
 bulbosa 122
 spicata 125
 Argemone 349, 350
 mexicana 350
 Argyrocoma imbricata 153
 Arioides 46
 Arisaema 44
 Dracontium 45
 triphyllum 44, 45
 Arisareae 46
 Aristolochia 236
 Serpentaria 236
 Aristolochiaceae 236
 Aristolochiaeae 235
 Arnoglossum 193
 Arnoglossum plantagineum 193
 Aroideae 44
 Arum 44, 45
 Dracontium 45
 triphyllum 44
 virginicum 45
 Arundo Phragmites 332
 Asaraceae 235
 Asarineae 235
 Asarum 235, 236
 canadense 236
 Asimina 297
 triloba 297
 Asparagi 109
 Asparagineae 108
 Asparagoideae 108
 Asparagus 108
 altilis 108
 domesticus 108
 esculentus 109
 holeraceus 108
 oficinalis 109
 petraeus 108
 sativa 109
 sativus 109
 scanensis 109
 vulgaris 108
 hortensis 108
 Aster Kumleini oliganthemos 344
 Asteranthemum 109
 stellatum 109
 trifolium 109
 vulgaris 109
 Astragalus conjunctus 32
 hoodianus 32
 Atragene 323
 Atriplex 275
 hastata 276
 littoralis 276
 patula 276
 Avellana 226
 Bacciferae 108
 Batrachion 318
 Batrachium 320, 336
 Trichophyllus 320, 336
 circinatum 321
 Batschia 194
 linearifolia 194
 longifolia 194
 Belharnosia 350
 canadensis 350
 Bermudiana 115
 angustifolia 115
 apiculata 116
 apiculata var.
 mesochora 116
 campestris 116
 graminea 116
 Betonica 293
 Betula 227
 Betula alba var. *populifolia* 227
 Betula Alnus 228
 Alnus var. *incana* 228

- Betula* *Alnus rugosa*.....228
 lenta.....227
 lutea.....227
 nigra.....227
 papyracea.....227
 pumila.....227
Betulla.....227, 228
 papyrifera.....227
 populifolia.....227
Besseyia.....188
 rubra.....184
Bicuculla.....174, 350
 chrysantha.....174
 canadensis.....351
 Cucullaria.....351
 ochroleuca.....174
 uniflora.....174
Bidens.....336
 Beckii.....336
Bidentideae.....336
Bifolium.....128, 110
 auriculatum.....129
 australe.....129
 convallarioides.....129
 cordatum.....128, 129
 majus.....129
 minimum.....128, 129
 ovatum.....129
 Smallii.....129
Bilderdykia cilinodis.....242
 Convolvulus.....242
 dumetorum.....242
Birds...23-29; 48-53; 60-62; 65-
 68; 70-76; 125-127; 158-166;
 201-206; 243-253; 283-286;
 298-310; 327-330; 355-360
Blephara.....295
Blepharigottis.....119
 alba.....120
 ciliaris.....119
 lacera.....120
 laucophaea.....120
 psycodes.....120
Blitum.....276
 capitatum.....276
 glaucum.....275
Boehmeria.....234
 cylindrica.....235
Botryanthus.....107
Botrydium.....275
 aromaticum.....275
Botryphile.....107
Bortys alba.....276
 ambrosioides.....275
 ambrosioides mexiocana.....275
 anthelmintica.....275
 aromatica.....275
 Berlandieri.....276
 bosciana.....275
 glauc.....275
 hybrida.....275
 leptophylla.....275
Brasenia.....294
 nymphaeoides.....295
Brasenia peltata.....294
 purpurea.....294
 Schreberi.....294
Bruniera.....41
 columbiana.....42
 punctata.....42
Bryonia alba.....155
Buccaferrea.....16
 natans.....16
Buda.....290
 rubra.....290
Buinalis.....152, 153, 154
 Baldwinii.....154
 floridana.....152, 153
Cabombeae.....294, 337
Cacalia.....192, 193
 atriplicifolia.....193
 floridana.....193
 ovata.....193
 reniformis.....193
 tuberosa.....193
Calceolus.....117
 Reginae.....117
 hirsutus.....118
 candidus.....117
 Mariae.....117
 parviflorus.....118
Calendula.....325
Calliprena.....105
Calla.....46
 palustris.....46

- Calamus*. 47
 aromaticus. 47
 odoratus. 47
Caltha. 325
 palustris. 325
Calycomelia. 186
 americana. 186
 biltomoreana. 186
 caroliniana. 186
 pennsylvanica. 186
 pistaciaefolia. 186
 profunda. 186
 quandrangulata. 186
Cameraria. 108
Campanula biflora. 192
Campydorum. 110
Cannabis. 233, 232
 sativa. 233
Cannarhodium. 108
Cantabrica. 293
Capnoides. 351
 flavulum. 351
 sempervirens. 351
Capnorchis. 350
 canadensis. 351
 Cucullaria. 351
Cardamine. 287
 Douglassi. 287
 purpurea. 287
Carpinus. 226
 caroliniana. 226
 virginiana. 226
Carya. 219
 alba. 219, 220
 amara. 220
 microcarpa. 220
 sulcata. 219
 tomentosa. 220
Caryon. 219
Caryophylleae. 272, 290
Caryophyllus. 292, 274
 minor. 293
Castalia. 295
 odorata. 296
 pudica. 296
 tuberosa. 296
Catharanthus. 150, 151
 roseus. 151
Cathea. 124
 pulchella. 124
 tuberosa. 124
Cathartolinum. 151
 striatum. 152
Caulinia flexilis. 19
Celosia. 278
 cristata. 279
Celsia. 107
Celtis. 231
 crassifolia. 232
 occidentalis. 231
 occidentalis var. *pumila*. 232
 pumila. 232
Centunculus Plinii. 235
Cepaeae. 104
Centrospermae. 274
Cerastium. 282, 283
 arvense. 289
 longipedunculatum. 289
 nutans. 289
 viscosum. 283
 vulgatum. 283
Ceratophylleae. 294
Ceratophyllum aquaticum. 294
 demersum. 294
 submersum. 294
Ceriferae. 220
Cerris. 229
Ceryna. 332
Chaemaenerion latifolium var.
 megalobum. 132
Chamaesyce glyptosperma var.
 integrata. 142
Chelidonium. 350
Chelidonium diphyllum. 344
 majus. 350
 vulgare. 350
Chenopodiales. 274
Chenopodium. 274, 275
 ambrosioides. 275
 album. 275, 276
 anthelminticum. 275
 Berlandieri. 276
 boscianum. 276
 Botrys. 275
 capitatum. 276
 glaucum. 275

- Chenopodium hybridum*.....275
 leptophyllum.....275
Chenopodio-Morus.....276
Christophoriana rubra.....326
 alba.....326
Chlorophyllum.....331, 332
 viride.....332
Chrysion biflorum.....215
Cicuculla uniflora.....175
Cimicifuga.....326
 racemosa.....326
Cirsium Flodmanni.....143
 ochrocentrum.....142
 nebraskense var. *for-*
 midolosum.....142
 nebraskense var. *dis-*
 cessum.....142
Circaea.....813, 184
 alpina var. *aleutica*.....184
 intermedia.....184
Cistaceae.....176
Claytonia.....281
 virginica.....281
Cleistogamous Flowers.....85
Clematis.....155, 156, 322, 323
 Flamula.....155
 florida.....156
 japonica.....156
 Viticella.....156, 155
 Viorna.....323
 virginiana.....323
 Vitalba.....323
Clethra.....228
Cnida.....234
Coeloglossum.....121
 bracteatum.....121
Coelopleurum longipes.....32
Collenchyma.....337
Collinsonia.....178
 anisata.....178, 177
 scabra.....177
 verticillata.....178
 verticillaris.....177, 178
Calopogon pulchellus.....124
 tuberosus.....124
Comandra.....235
 umbellata.....235
Commelina.....99
 virginica.....100
Compositae.....192
Comptonia.....220
 asplenifolia.....220
 peregrina.....220
Conophora.....193
 atriplicifolia.....193
 diversifolia.....193
 floridana.....193
 maxima.....193
 ovata.....193
 reniformis.....193
 similis.....193
 tuberosa.....193
Consolida.....173, 325
 Ajacia.....173, 326
 regalis.....173, 326
Convallaria.....111
 biflora.....110
 commutata.....111
 Lilium Convallium.....111
 majalis.....111
 racemosa.....109
 trifolia.....109
Coprosmanthus.....113
 herbaceus var. *ecirrhatu*s.....113
Coptis.....324
 trifolia.....324
Corallina.....93
Corallorhiza.....124
 Corallorhiza.....124
 innata.....124
 odontorhiza.....124
 trifida.....124
Corispermum.....277
 hyssopifolium.....278
Corrigiolaceae.....279
Corion.....290
Corone.....291
Coronaria.....292
 tomentosa.....292
Corniveum.....174, 175
 uniflorum.....175
Cornus canadensis.....166
Corydalis.....351
 canadensis.....351
 flavula.....351
 glauca.....351

- Corydalis sempervirens* 351
Corylus 226
 americana 227
Crocianthemum 207, 176
Crocion 209, 214
 eriocarpum 214
 pubescens 214, 215
Curages 201
Cucubalus 57
 latifolius 291
 stellatus 58
Cucullaria 350
Cupuliferae 226, 228
Cupulaceae 226
Cyclinanthus 293
 barbatus 293
 maculatus 293
Cycloloma 276
 atriplicifolia 277
Cymbidium odontorhiza 124
 pulchellum 124
Cynorrodium 108
Cyperella 103
Cyphorima 194
 angustifolia 194
Cypripedieae 117, 118
Cypripedium *Reginae* 117
 acaule 118
 album 117
 candidum 117
 Calceolus 117
 hirsutum 118
 parviflorum 118
 pubescens 118
 spectabile 117
Czernya 332

Damasonium 21
Dasiphora fruticosa 130
Dasiphora fruticosa var. *ap-*
 pendiculata 129
Decemium 156
Delphidium 172
Delphinastrum 172
 Andersoni 172
 carolinianum 172
 distichum 172
 exaltatum 172
 Delphinastrum glaucum 172
 leucophaeum 172
 Menziesii 172
 nudicaule 172
 nuttallianum 172
 Nelsoni 172
 occidentale 172
 Treleasei 172
 tricornae 172
 trollifolium 172
 urceolatum 172
 vimineum 172
 Delphinastrum virescens 172
Delphinium 171, 173, 225
 Ajaxis 171, 173, 326
 carolinianum 172
 Consolida 171, 173, 326
 exaltatum 172
 Nelsoni 172
 peregrinum 171, 173
 Treleasei 172
 tricornae 172
 virescens 172
Dens canis 106
Dentali 106
Despeleza 175, 176
 angustifolia 176
 capitata 176
 hirta 176
 leptostachya 177
Dianthus 293
 Armeria 293
 barbatus 293
 plumarius 293
Dicentra 350
 canadensis 351
 Cucullaria 351, 174
 uniflora 174, 175
Dichotophyllum 294
 demersum 294
Diclytra 350
 Cucullaria 351
 canadensis 351
 canadensis 351
Dicotyledoneae 217
Dicotyledones 217
Diosanthos 293

- Diosanthos armerium*.....293
 barbatum.....293
 Theophrasti.....293
Dioscorea paniculata.....114
 villosa.....114
Dioscoreae.....114
Dioscorideae.....114
Dioscorineae.....114
Diphryllum.....128
Distomaea.....128
 cordata.....129
 ovata.....129
Dogbanes.....53
Dodocatheon.....147
 pauciflorum....146, 343
 thornense....146, 343
Drimocaria.....220
 minima.....220
Drosera rotundifolia.....20
Drys.....229
Duretia.....234

Echinocaulos.....242
Echtrus.....349
 Mexicanus.....350
 trivialis.....350
Eleagnus argentea.....142
Elodea canadensis.....22
Ellisia microcalyx.....157
Elodis.....198
Elodea.....198
Enemion.....324
Enemion bitermatum.....324
Enetophyton.....189
 cleistogamum.....189
Ensatae.....114
Enteromorpha linza.....94
Ephemero-phalangium.....100
Ephemerum.....100
Ephemerum congestum.....100
Epilobium adenocaulon var.
 pseudocoloratum.....142
Epilobium Hammondi.....32
Epipactis.....123
Equisetales.....47
Equisetum Telmateia.....16
Erigeron.....1
 abruptorum.....1, 2, 3
 Erigeron var. *appressus*.....1, 2, 3
 anodontus.....2, 6, 344
 asper.....1, 2
 var. *appressus*....1, 2, 3
 var. *subinteger*....143
 oligodontus.....2, 3
 oxyodontus.....2, 3
 procerus.....2, 5, 344
 subcostatus.....2, 5
 tardus.....344
Eriocaulaceae.....99
Eriocaulon.....99
 articulatum.....99
 septangulare.....99
Eriocauloneae.....99
Erythronium.....106
 albidum.....106
 americanum.....106
 angustatum.....106
Eucarya.....219
Eucentrion.....210, 216
Euion.....209, 211
Eulophion.....210, 215
Eupersicaria.....239
Euthalia.....289
 serpyllifolia.....289
Evactoma.....57, 291
 stellata.....58, 59
 stellata var. *scabrella*
 58, 291
Evallaria.....110

Fagaceae.....228
Fagales.....226
Fagineae.....228
Fagopyrum.....237
 esculentum.....238
 vulgare.....238
Fagus.....229
 americana.....229
 ferruginea.....229
 grandifolia.....229
Fissipes.....118
 acaulis.....118
Fluviales.....16, 19
Fraximus.....184, 185
 americana.....186
 anomala.....187

- Fraxinus biltmoreana* 186
caroliniana 186
cuspidata 187
dipetala 188
Greggii 187
lanceolata 186
longicuspis 187
nigra 186
Ornus 187
pennsylvanica 186
pistaciaefolia 187
profunda 186
pubescens 186
platycarpa 186
quadrangulata 186
viridis 186
Fraseria 192
Fraxinoides 186
excelsior 186
nigra 186
Fucus 95
Fumariaceae 174, 350
Galearis 69, 198, 118
spectabilis 119
Galeorchis 198, 118
spectabilis 119
Galax 157
Galliaria 278
albida 278
blitoides 278
graecizans 278
hybrida 278
retroflexa 278
scabra 278
spinosa 278
Galypola 179, 180
incarnata 180
Geboscon 104
Geminaceae 184
Gentiana 184
Oxfordii 32
Gentianaceae 192
Gigartina mammilosa 93
Gillenia 198
Githago 290
segetalis 291
segetum 290
Glandiferae 228
Glastum 293
Gonopyros 170, 171, 242
Gonopyrum 170, 171, 242
americanum 171
orticulatum 171, 243
Goodyera 123
pubescens 123
Grindelia squarrosa var. *quisiperrensis* 143
Grantia 42
Columbiana 42
Gueria canadensis 279
Gymnandra 188
rubra 189
Gyrostachys 122
cernua 122
gracilis 123
latifolia 122
plantaginea 122
Gymnadeniopsis 120
clavellata 120
Gypsophyton 292
Habenaria 119, 120, 121
Blephariglottis 120
ciliaris 120
ciliaris var. *alba* 120
clavellata 120
dilatata 119
flava 121
hookeriana 119
Hookeri var. *oblongifolia* 119
hyperborea 119
lacera 120
leucophaea 120
orbiculata 119
psycodes 120
tridentata 120
virescens 121
Halimium 176, 207
Hamamelis 62
corylifolia 62
hyemalis 62
japonica 61
macrophylla 64
riparia 62

- Hamamelis rotundifolia*..... 64
 verna..... 61
 virginiana.... 61, 62, 63
 virginiana var. *augustifolia*..... 63
 virginiana var. *orbiculata*..... 64
Hederula aquatica..... 43
Helianthemum..... 176, 207
Helleborine..... 124
Helobiae..... 15
Helleboraceae..... 324
Helleborus trifolius..... 324
Helxine..... 237
 cissampelos..... 242
Hedysarum lirtum..... 176
Hecatonia..... 318
 palustris..... 318
Hemerocallis..... 108, 353, 354
 flava..... 353, 354, 355
 fulva..... 108, 353, 354
 Lilio-Aphodelus fulvus..... 108
Hepatica..... 321
 acuta..... 321
 acutiloba..... 321, 316
 trifolia..... 321
 trifolium..... 321
 triloba..... 321
 triloba var. *acuta*..... 321
 nobilis..... 321
 verna..... 321
Heptarinia..... 240
Heracleum..... 184
Herniaria floridana..... 152
Hesperion..... 209, 211
Heteranthera..... 101
 dubia..... 101
Hexaglochin..... 19, 20
 sexlocularis..... 20
 martima..... 20
Hexonychia..... 105
Hibiscus Trionum..... 291
Hicoria..... 219
 cordiformis..... 220
 laciniosa..... 219
 microcarpa..... 220
 minima..... 220
Hicoria ovata..... 219
Hierochloa..... 198
 alpina..... 198
 Nashii..... 198
 odora..... 198
 pauciflora..... 198
Hippia minor..... 282
Hirundinaria..... 350
 major..... 350
Holeraceae..... 274
Horkelia..... 42
Humulus..... 233
 americanus..... 233
 Lupulus..... 233
 salictarius..... 233
Hutchinsia..... 184
Hyacinthus botryoides..... 107
 racemosus..... 107
Hydroceratophyllum..... 294
Hydroceratum..... 294
 laevis..... 294
Hydropeltis..... 294
 purpurea..... 294
Hydrophace..... 42
 minor..... 42, 43
 trisulca..... 43
Hydrophyllum appendiculatum..... 156, 157
Hydrophyllum pusillum..... 158
Hypogon..... 177
 anisatum..... 178
 verticillaris..... 177
 verticillatum..... 177, 178
Hypoxis..... 114
 erecta..... 114
 hirsuta..... 114
Ibidium..... 122
 plantagineum..... 122
Ictodes..... 46
 foetidus..... 46
Ilex..... 229
Iris..... 115
 foetidissima..... 99
 versicolor..... 115
 versicolor var. *blandescens*..... 115
 virginica..... 115
Ischaemon..... 103

- Ischaemum*..... 103
Isoetes Howellii..... 32
Isopyrum..... 324
 bitematum..... 324
Itea..... 62, 223

Jalap..... 280
Jalapa..... 280
Juglans..... 218
 alba..... 219, 220
 alba odorata..... 220
 alba minima..... 220
 cinerea..... 219
 laciniosa..... 219
 nigra..... 218
 ovata..... 219
 regia..... 219
 tomentosa..... 220
Juliferae..... 226
Juliflorae..... 226
Juncago..... 19
 palustris..... 19
Juncodes..... 103
Juncoides..... 103
 campestre..... 103
Juncacae..... 101
Juncoideae..... 101
Juncus..... 101
 acuminatus..... 103
 balticus..... 102
 bachycarpus..... 103
 bufonius..... 102
 brachycephalus..... 103
 canadensis..... 102, 103
 canadensis var. *brachy-*
 cephalus..... 103
 Dudleyi..... 103
 effusus..... 102
 Greenii..... 102
 marginatus..... 102
 nodosus..... 103
 polycarpus..... 102
 richardsonianus..... 102
 robustus..... 102
 scirpoides..... 103
 tenuis..... 102
 Torreyi..... 103
Jupica..... 99

Kali..... 277
Kobus..... 297
 acuminata..... 297
 tripetala..... 297
Kochia atriplicifolia..... 277
Knawel..... 280
Knavelia..... 280
Knavel..... 280
Knavel annuum..... 280
Kottsjillettia..... 98
 flexuosa..... 99
Krinon..... 106

Lacinaria scariosa uniflora var.
 nov...... 344
Lapathos..... 237
Lapathum..... 237
 altissimum..... 237
 brittanicum..... 237
 crispum..... 237
 mexicanum..... 237
 verticillatum..... 237
Laportea..... 234
 canadensis..... 234
Larix..... 69
Legouzia..... 192
 perfoliata..... 192
Lemma..... 42
Lemna..... 42, 44
 minor..... 43
 polyrhiza..... 44
 trisulca..... 43
Lens palustris..... 42, 43
Lenticula..... 42
 aquatica..... 42, 43
 trisulca..... 43
Lepigonum..... 290
Leptali..... 186
 platycarpa..... 186
 pubescens..... 186
Leptophyllum..... 275
Leptorchis..... 124
Leptorchis lilifolia..... 124
 Loeslii..... 123
Lespedeza..... 175, 176
 capitata..... 176
 capitata var. *angustifolia*.... 176
 hirta..... 176

- Lespedeza leptostachya*.....177
 virginica.....175
Leuce.....221
Leuconymphaea.....296
 odorata.....296
 reniformis.....296
Leucocoma.....254, 323
 canadensis.....254, 323
 dioica.....324
Leucopitys.....69
 Strobilus.....70
 excelsa.....70
Liliales.....101
Liliaceae.....105
Liliodeae.....105
Lilium.....106
 andinum.....106
 canadensis.....105
 album.....111
 Convallium.....42, 111
 majalis.....111
 superbum.....106
 tigrinum.....106
 umbellatum.....106
Liliasphodelus.....108
Liliago.....111
Lilio asphodelus.....108
Limnorchis.....119
 dilatata.....119
 hyperborea.....119
Limodorum.....124
 tuberosum.....124
 tuberosum
 var. nanum.....130
Linum striatum.....151, 152
 Cymbalaria.....333
Linnaea americana.....166
Linum catharticum.....151, 152
 rigidum.....152
 sulcatum.....152
Liquidambar asplenifolia.....220
 peregrina.....220
Liparis.....123
 liliifolia.....124
 Loeselii.....123
Liriodendron.....297
 Tulipifera.....297
Listera.....128
 auriculatum.....129
 australis.....129
 convallarioides.....129
 cordata.....128
 ovata.....128
 reniformis.....129
 Smallii.....129
Lithospermum.....194
 angustifolium.....194
 linearifolium.....194
Lochnera.....151
 rosea.....151
Lonicera.....191
 sempervirens.....191
 arizonica.....191
Lophion.....209, 215
 canadense.....216
 rostratum.....216
 striatum.....216
Lotos.....231
Luciola.....104
Lunellia.....188, 189
 rubra.....189
Lupulus.....232, 233
 communis.....233
 salictarius.....233
Luzula.....103
 campestris.....103
 saltuensis.....104
Lychnis.....292
 agrestis.....291
 agria.....291
 arvensis.....291
 coronaria.....292
 Githago.....291
 rustica.....291
 segetum.....291
 stephanomatike.....292
Lycopodiaceae.....47
Lysias.....119
 hookeriana.....119
Lythrum alatum.....266, 267, 268, 270
 cordifolium.....265, 266
 dacotanum.....266
 flagellare.....267, 268, 270
 gracile.....266
 hyssopifolia.....270
 lineare.....266

- Lythrum ovalifolium*.....268, 269, 270
 parvulum.....267, 270
 Vulneraria.....266

Maclura.....232
 aurantiaca.....232
 pomifera.....232
Macrotrys.....326
 racemosa.....326
Magnoliaceae.....296, 297
 acuminata.....297
 virginiana var. *acu-*
 minata.....297
Maia.....110
Maianthemum.....109, 110, 111
Majanthemum stellatum.....109
Mannaphorus.....187
Marsilia.....42
Massula angustifolia.....14
Matteucia.....196, 195, 196, 197
 Struthiopteris.....194, 197
Meconopsis diphylla.....349
Medeola.....111
 virginica.....112
Medlar tree.....63
Megalodonta Beckii.....336, 341
 nudata.....336
Mekon.....349
 Rhoias.....349
Melanojoe.....111
Melanthaceae.....104
Melanthideae.....104
Melanthium.....104
 virginicum.....104
Melobesia marginata.....92
Mesadenia.....192, 193
 atriplicifolia.....193
 diversifolia.....193
 ovata.....193
 plantaginea.....193
 maxima.....193
 reniformis.....193
 similis.....193
 tuberosa.....193
Mesochora.....350
Mespilus.....63
Micheliella.....177, 178, 101
 verticillata.....178
 Micheliella anisata.....178
Miphragtes.....332
Mirabilis.....280
 peruviana.....280
 Jalapa.....280
Mirabile peruvianum.....280
Mithridatum.....106
Mnemion.....210, 217
 arvense.....217
 Rafinesquii.....217
 tricolor.....217
Moehringia.....290
 lateriflora.....290
Molluga.....281
 verticillata.....281
Monocotyledoneae.....14
Monophyllon.....110
Montia Howellii.....32
Moraceae.....232
Morocarpus.....276
 major.....276
Morus.....232
 alba.....232
 candida.....232
 rubra.....232
Muralis herba.....235
Muricauda.....44
 Dracontium.....45
Murrillia.....332
Murrillomyces.....332
Muscari.....107
 botryoides.....107
 racemosum.....107
Muscipula.....291
Myosurus.....313
 minimus.....311, 312,
 313, 314, 315, 316
Myricaceae.....220
Myrica asplenifolia.....220
Myosotis.....283

Najas.....19
 flexilis.....19
Narthecium glutinosum.....104
Narukila.....101
 cordata.....101
 var. *lancifolia*.....101
Nasmythia articulata.....99

- Nasturtium aquaticum*.....337
Nayadeae.....16, 19
Negundo.....148, 149, 150
 Californicum.....149
 fraxinifolium.....150
 interius.....149, 150
 Nuttallii.....149, 150
 texanum.....149
Nelumbo.....296
 lutea.....296
Nelumbium.....296
 luteum.....296
Nemexia.....113
Nemexia pulverulenta.....113
 ecirrhata.....113
Nemophila.....158
 microcalyx.....157
Nemorosa.....321, 322
 canadensis.....322
 quinquefolia.....322
Nenuphar.....295
Neobeckia.....337
Neolexis.....109
Neottiinae.....121
Neottia lucida.....122
 plantaginea.....122
 pubescens.....123
Neurophyllum viride.....331, 332
Nezera.....151
 albifolia.....152
 striata.....152
 virginiana.....152
Nigellastrum.....290
Nigredo Polemonii.....337
Nintooa.....191
Nuciferae.....218
Nuculaceae.....218
Nux.....218
 Avellana.....226
 Juglans.....218
 juglans virginiana nigra.....218
Nuphar.....295
 advena.....295
Nymphaea.....295, 296
 advena.....295
 odorata.....296
 tuberosa.....296
 maculata.....296
Nymphosanthos.....295
Nymposanthus.....295
Octima.....221
Oionychion.....209, 211
 pedatum.....210
 pedatum var. ampliatum.....211
 pedatum var. inornatum.....210
Olfa.....324
Onagraceae.....184
Oncerum.....291
Ophris.....128
Ophrydeae.....118
Ophrys, cernua.....122
 cordata.....129
 Corollorluza.....124
 liliifolia.....124
 Loesellii.....123
 ovata.....12
Orchideae.....117
Orchidion.....122
Orchiastrum.....122
Orchis.....119, 123
 alba.....120
 blephariglottis.....120
 ciliaris.....120
 ciliaris (var.) alba.....120
 dilatata.....119
 fimbriata.....120
 flava.....121
 hyperborea.....119
 lacera.....120
 leucophaea.....120
 psycodes.....120
 spectabilis.....119, 198
 tridentata.....120
 virescens.....121
Ornanthes.....187
 florida.....187
Ornithogalum.....107
 hirsutum.....114
 umbellatum.....107
Ornus.....187, 188
 bracteata.....187
 cuspidata.....187
 dipetala.....188

- Ornus europaea* 187
 Gregii 187
 longicuspis 187
 retusa 187
 sieboldiana 187
Orobanche 124
 Ruellii 242
Orontiaceae 46
Ostrya 226
Ostrya virginiana 226
Ostrys 226
Oxys 229
Oxybaphus 280
 nyctagineus 280
Oxycoccus macrocarpus 20
Oxylapathum 236
Oxyanthe 332
 Phragmites 332

Paeoniaceae 324
Paliris 123
Pandanales 14
Panicum sanguinale 350
Papaver 349
 album 349
 candidum 349
 erraticum 349
 nigrum 349
 Rhoeas 349
 sativum 349
 soporiferum 349
 somniferum 349
 urbicum 349
Parietaria 235
 pennsylvanica 235
Paronychia 154, 279
 Baldwinii 152, 154, 155
 hernarioides 154
 riparia 154, 155
Peltandra 45
 undulata 45
 virginica 45
Pentaphylloides 130
Pentalophus 194
 augustifolius 194
 longiflorus 194
Pentstemon 157, 191

Peramium 123
 pubescens 123
Perdicium 235
Persicaria 238, 236, 200
 ammophila 239, 16
 carictorum 238
 coccinea 238
 coccinea (var.) *asprella* 238
 emersa 238
 emersa var. *asprella* 238
 fluitans 239
 grandifolia 238
 Hartwrightii 239
 Hydropiper 240
 hydropiperoides 240
 lapathifolia 239
 maculata 239
 mesochora 239
 mesochora var. *areni-*
 cola 239
 mitis 239
Persicaria orientalis 241
 pratincta 238
 pennsylvanica 239
 persicarioides 239
 punctata 240
 punctata var. *leptosta-*
 chya 240
 punctata var. *eciliata* 132
 punctata var. *tacubayana* 131
 tanaophylla 238
 tomentosa 240
 urens 240
Perularia 121
 flava 121
Petlomeia 187
 dipetala 188
Peyssonellia dubia 92
Pfegus 229
Phalangium 111
Phellos 229
Phenianthus 191
 arizonicus 191
 sempervirens 191
Philotria 221
 canadensis 22
Phragmitis 332
Phragmites communis 332

- Phyllanthum*.....112
 recurvatum.....113
 sessile.....112
Physocarpum.....254
 clavatum.....254
Phytolacca.....279
 americana.....279
 decandra.....279
 vulgaris.....279
Pinus.....68, 69
 Cembra.....68
 excelsa.....68, 70
 Pinea.....69
 Strobilus.....68, 69, 70, 64
 Virginiana.....333
Piperales.....217
Piperinae.....217
Piperitae.....44
Pistolochia.....236
Plagidia.....153, 154
 Baldwinii.....152, 154, 155
 hernarioides.....153, 154
 montana.....155
 riparia.....155
 rufa.....154
Plantaginastrium.....21
Plantanthera.....119
Phledinium.....173
 peregrinum.....173
Pleuropterus.....241
 Zuccarinii.....241
Poa chapmaniana.....312
Pogonia.....121
 ophioglossoides.....121, 125
 pendula.....121
Pollinirhiza.....128
 cordata.....129
 ovata.....129
Polyanthemum.....320
Polygala.....178, 179, 180, 181
 cinarnata.....180
 paucifolia.....180, 181
 polygama.....88, 180
 Senega.....181
 uniflora.....181
Polygonastrum.....109
Polygonatum.....110
 biflorum.....110
 Polygonatum commutatum.....110
 giganteum.....111
Polygonastrum racemosum.....109
Polygonella.....171, 242
 americana.....171
 articulata.....171, 243
 ericoides.....171
Polygonum.....237, 241, 236
 acre.....240, 132
 acre (var.) leptostachyum 240
 amphibium (var.) emer-
 sum.....238
 arifolium.....242
 articulatum.....171
 bicorne.....200, 201
 longistylum.....200, 201
 cilinode.....242
 cuspidatum.....241
 dumetorum.....242
 erectum.....241
Polygonum Fagopyrum.....238
Polygonum hederaceum.....242
 Hydropiper.....240
 hydropiperoides.....240
 incarnatum.....239
 lapathifolium.....239
 latifolium.....241
 majus.....241
 mas.....241
 masculum.....241
 mite.....240
Polygonatum multiflorum.....100
Polygonum orientale.....241
 pennsylvanicum.....239
 Persicaria.....240
 persicarioides.....239
 primum.....241
 punctatum.....240
 punctatum (var.)
 leptostachyum.....240
 sagittatum.....242
 virginianum.....241
 tenue.....241
 tomentosum.....240
 vulgare.....241
Polysiphonia californica.....93
Polysporon.....276
Pontederia.....101

- Pontederia cordata*..... 101
 (var.) *lancifolia*.. 101
 lancifolia..... 101
Populago..... 325
 palustris..... 325
Populus..... 221, 222
 alba..... 221
 alba bolleana..... 221
 angulata.....
 balsamifera (var.) *can-*
 dicans..... 223
 bolleana..... 221
 canadensis..... 222
 candicans..... 223
 candida..... 221
 carolinensis..... 222
 deltoides..... 222
 grandidentata..... 221
 heterophylla..... 222
 marilandica..... 222
 montilifera..... 222
 nigra..... 221, 222
 nigra italica..... 222
 pyramidalis..... 222
 tremuloides..... 221
 virginiana..... 222
Portulacca..... 281
 arvensis..... 281
 grandiflora..... 282
 minor..... 281
 oleracea..... 281
 sylvestris..... 281
Potamogeton..... 16
 americanus..... 16
 amplifolius..... 16
 angustifolius..... 17
 praelongis..... 17
 compressus... 17, 18, 19
 diversifolius..... 18
 filiformis..... 18
 flabellatus..... 18
 foliosus (var.) *niaga-*
 rensis.....
 Friesii..... 17
 heterophyllus..... 17
 hybridus..... 18
 lonchites..... 16
 lucens..... 17
 Potamogeton major..... 18
 niagarensis..... 18
 obtusifolius..... 19
 pauciflorus var. *ni-*
 agarensis..... 18
 pectinatus..... 18
 perfoliatus..... 17
 perfoliatus (var.) *lan-*
Ceolatus..... 17
 perfoliatus (var.)
 lanceolatus..... 17
 perfoliatus (var.)
 richardsonii..... 17
 pulcher..... 16
 pusillus..... 18
 pusillus var. *major*... 18
 Robinsii..... 19
 Zizii..... 17
 zosteraefolius..... 17
Prinus..... 205
Prionitis... 91, 92, 93, 94, 95, 96, 97
 lanceolata..... 93
 Lyallii..... 92, 93
Provenzalia..... 46
 palustris..... 46
Psammogonum..... 242, 171
 americanum..... 171
 articulatum... 242, 171
Pseudomelanthium..... 290
Pseudorchis..... 123
 Loesellii..... 123
Psittacus..... 278
Ptelea..... 62, 131
Quercus..... 229
 alba..... 229, 333
 minor..... 229
 bicolor..... 230
 coccinea..... 230
 var. *tinctoria*..... 230
 ellipsoidalis..... 230
 imbricaria..... 230
 lyrata..... 230
 macrocarpa..... 230
 Michauxii..... 230
 minor..... 209
 obtusiloba..... 209
 olivaeformis..... 230

- Quereus palustris*.....230
 prinoides.....230
 rubra.....230
 stellata.....230
 tinctoria.....230
 velutina.....230
Queria canadensis.....273
 capillacea.....279

Ramium.....234
 cylindricum.....235
Ramotha.....99
Ranales.....294
Ranunculus, 21, 174, 312, 318,
 320, 333, 336
 abortivus 312, 318,
 333, 334, 335
 var *micanthus*...334
 acer.....320
 acris.....320
 Allegheniensis.....335
 aquaticus.....318
 aquatilis var. *divari-*
 catus.....320
 var. *trichophyllus* 32
 Auricomus.....318
 bulbosus.....320
 caricetorum.....319
 circinatus.....321
 cymbalistes.....333
 delitesceus.....333
 delphinifolius.....319
 ellipticus.....13
 exiguus.....320
 fascicularis.....320
 glaberrimus.....13
 Harveyi.....333
 Holmii.....334
 lacustris.....319
 lumosus.....319
 micranthus.....321
 multifidus var. *re-*
 repens.....319
 Nemorasus.....288
 ovalis.....13
 palustris.....318
 pensylvanicus.....319
 Purshii.....319

Ranunculus Randalia.....99
 rapaceus.....320
 recurvatus.....315
 repens.....319
 ruderalis.....334, 335
 septentrionalis.....319
 sylvestris.....318
 thalictrifolius.....288
 trichophyllus.....320
 tuberosus.....320
 vinealis.....319
 Waldronii.....12, 13

Rhabdotion.....210, 216
Rhagrostis.....277
Rhizocarpeae.....47
Rhizocorallon.....124
Rhoedales.....349
Rhodomelia.....95, 97
 larix.....93
Rhus angustiarum.....144
 cismontana.....145, 148
 glabra.....145
 Hapemanii.....147
 petiolata.....146
 sambucina.....145
Roripa.....337
Rosa deserta.....136, 137, 139
 Fendleri.....139
 gratiosa.....135, 136, 137
 var. *dulcissima* 135
 136, 139
 heliophila.....135, 135, 137
 var. *foliosissima* 135,
 136, 137
 Lunellii.....135, 136, 137
 Maximiliani.....139
 naiadum.....136, 137, 139
 poetica.....136, 137, 139
 polyanthema.....135, 136, 138
 pratincta.....137
 subnuda.....136, 137, 139
 terrens.....139
 R. Maximiliani).....136
Rulac.....180, 183
Ruppia.....16
Rumex.....237
 Acetosella.....236
 britannicus.....237

- Rumex crispus*.....
 Hydrolapathum var.
 americana.....237
 mexicanus.....237
 orbiculatus.....237
 salicifolius.....237
 verticillatus.....237

Saccharodendron.....182, 183
 barbatum.....182
 floridanum.....182
 grandidentatum.....183
 hispidum.....183
 leucoderme.....182
 saccharinum.....183
Sacchrosphendamus.....183
 saccharinus.....183
Sagitta.....21
 engelmanniana.....22
 latifolia.....21
 rigida.....22
Sagittaria.....21
 engelmanniana.....22
 graminea.....22
 heterophylla.....22
 latifolia.....21
 rigida.....22
 variabilis var. *gracilis*... 22
Salix.....223
 adenophylla.....224
 Alba.....223
 amygdaloides.....224
 angustata.....224
 babylonica.....223
 bebbiana.....225
 candida.....223, 225
 candidula.....225
 cordata.....224
 angustata.....224
 discolor.....225
 eriocephala.....225
 exigua.....224
 falcata.....224
 fluviatilis *exigua*.....224
 fragilis.....223
 glaucophylla.....225
 gracilis.....225
 humilis.....224
 var. *tristis*.....225
 interior.....223
 longifolia.....223
 lucida.....223
 myrtilloides var. *pedicellaris*.....225
 nigra.....224
 pedicellaris.....225
 pentandra.....223
 perticalis.....223
 petiolaris.....225
 prinoides.....225
 purpurea.....224
 rostrata.....225
 sericea.....225
 syrticola.....224
 tristis.....225
 viminalis.....224
 viminea.....224
 vitellina.....223, 225
Salomonina.....110
 biflora.....110
 commutata.....111
Salsola.....277
 pestifer.....277
Sambucus.....310
 Ebulus.....326
 pubens var. *xanthocarpa*.....310
 racemosa var. *xanthocarpa*.....310
Sanguinaria.....350
 canadensis.....350
Santalaceae.....235
Santalales.....235
Saponaria.....292
 major.....292
 officinalis.....292
 vaccaria.....293
 vulgaris.....292
Sarracenia purpurea.....20
Saururus.....217
 cernuus.....218
Savastana.....198
 alpina.....198
 Nashii.....198
 odorata.....198

- Savastana pauciflora*.....198
Saxifraga Howellii..... 32
Scheuchzeria.....19, 20
 palustris..... 20
Sceleranthus.....280
 annus.....280
Schizmaxon..... 99
Schollera.....101
Scilleae.....107
Sciophyla.....110
Schiophylla.....110
Scorius.....219
Senega.....181
 officinalis.....181
Serapias.....123
Setiscapela.....190
 cleistogama.....190
 subulata.....190
Sieboldia.....156
 japonica.....156
 Viticella.....156
Sigillaria.....109
Silene.....57, 291
 antirrhina.....291
 armeria.....291
 conica.....291
 inflata.....291
 latifolia.....291
 stellata..... 58
 var. scabrella..... 58
 virginica.....291
Siler.....223
Sisryinchium.....115
 angustifolium.....116
 apiculatum.....116
 var. meso-
 chorum.....116
 campestre.....116
 gramineum.....116
 graminoides.....116
Smallia.....158
Smilacina.....109
 bifolia var. cana-
 densis.....110
 racemosa.....109
 trifolia.....109
Smilax.....113
 caduca.....113
 echirrhata.....113
 glauca.....114
 quadrangularis.....113
 hispida.....114
 pulverulenta.....113
 rotundifolia.....113
 spinulosa.....114
Sobraliinae.....125
Soranthera sp. Prionitis..... 94
Sorghum.....332
Sparganium..... 15
 eurycarpum..... 15
 minimum..... 15
 simplex..... 15
Spathyema..... 46
 foetida..... 46
Specularia.....191, 192
 biflora.....192
 leptocarpa.....192
 perfoliata.....191, 192
 Speculum.....191
 Veneris.....191
Spergula.....292
 multicaulis.....289
Spergularia.....290
 rubra.....290
Spiranthes.....122
 cernua.....122
 gracilis.....123
 latifolia.....122
 lucida.....122
 plantaginea.....122
Spirillus..... 16
 amplifolius..... 16
 diversifolius..... 18
 filiformis..... 18
 foliosus var. niagaren-
 sis..... 18
 Friesii..... 17
 heterophyllus..... 17
 interruptus..... 18
 lonchites..... 16
 lucens..... 16
 nataus..... 17
 obtusifolius..... 19
 pectiniformis..... 18

- Spirillus perfoliatus*
 var. *Richardsonii*.... 17
 praelongus..... 17
 pulcher..... 16
 pusillus..... 18
 Robinsii..... 29
 Zizii..... 17
 zosteraefolius..... 17
Spirodela..... 44
 polyrhiza..... 44
Staurogeton..... 42
 trisulcus..... 43
Stellaris..... 282
 graminea..... 284
 longifolia..... 282
 longipes..... 282
Stellaric..... 107
Strithiopteris..... 197
Struthion..... 292
Struthiopteris... 194, 195, 196, 197
 Cordi..... 196, 197
Sturmia..... 123
Stylophorum..... 344
 disphyllum..... 341
Styrandra..... 110
Suber..... 229
Sumnera..... 254
 clavata..... 254
Superba..... 293
 recentiorum..... 293
Sykaminea..... 232
Symplocarpus..... 46
 foetidus..... 46
Synandrea..... 117
Syndesmon..... 253, 254, 288, 323
 thalictroides..... 288, 323
Syntheris..... 188
 alpina..... 188
 gymnocarpa..... 189
 rubra..... 188, 189
 wyomingensis..... 189
Talauma..... 297
Talinum..... 281
 teretifolium..... 281
Telmatophace..... 44
Thalesia..... 190, 191
Thesium umbellatum..... 235
Thalictrum..... 253, 323
 alpinum..... 254
 anemonoides..... 253, 288, 323
 canadense..... 254, 323
 caule unifloro..... 288
 clavatum..... 254
 cornuti..... 254, 323
 corynellum..... 323
 dasycarpum..... 324
 dioicum..... 324
 foetidum..... 254
 polyamum..... 254, 323
Thamecnemum..... 293
Thuja occidentalis..... 166
Thunniinae..... 124
Thyris..... 293
Tiniaria..... 242
 cilinodeis..... 242
 convolvulus..... 242
 dumetorum..... 242
Tissa..... 296
Tofieldia..... 104
 glutinosa..... 104
Tovara..... 241
 virginiana..... 241
 Adams..... 109
Toxylon..... 232
 pomiferum..... 232
Tracaulon..... 242
 arifolium..... 242
 sagittatum..... 242
Tradescantia..... 100
 reflexa..... 100
 virginica..... 100
Tragopyrum..... 237
Tremula..... 281
Trichoon..... 332
 Phragmites..... 332
Trichlisperma..... 180, 181
 grandiflora..... 181
 paucifolia..... 181
Trichophyllos..... 320
Trichophyllon..... 320
Triglochin..... 19, 20
 elata..... 20
 maritima..... 20
 var. *elata*..... 20

- Triglochin palustris*..... 19
 sexlocularis..... 20
 striata..... 20
 tricapularis..... 19
Trillium..... 112
 cernuum..... 112
 erectum..... 112
 grandiflorum..... 112
 recurvatum..... 113
 rhomboideum var.
 grandiflorum..... 112
 sessile..... 112
Trilopus..... 62, 63
 hymealis..... 62, 63
 riparius..... 62, 63
 virginicus..... 62
Trinitas..... 321
Triodanis..... 191, 192
 biflora..... 191
 leptocarpa..... 192
 perfoliata..... 192
 rupestris..... 192
Triodallus rupestris..... 192
Triorchis..... 122, 123, 158
 cernua..... 122
 gracilis..... 123
 Grayi..... 123
 linearis..... 123
 ochroleuca..... 123
 ovalis'..... 123
 plantaginea..... 122
 praecox..... 123
 romanzoffiana..... 123
 stricta..... 123
Triphora..... 121
 trianthophora..... 121
Triteleia Howellii..... 32
Tulipastrum..... 297
Tulipifera..... 296, 297
 Liriodendron..... 297
Typha..... 14
 angustifolia..... 14
 aquatica..... 14
 latifolia..... 14
 media..... 14
 palustris..... 14
Typhaceae..... 14
Typhoideae..... 14
- Ulmus*..... 231
 americana..... 231
 fulva..... 231
 racemosa..... 231
 Thomae..... 231
Ulva..... 92, 96
 lactuca..... 93
Unifolium..... 109, 110
 canadense..... 110
Urtica..... 233, 234
 canadensis..... 234
 capitata..... 235
 cylindrica..... 235
 divaricata..... 234
 Dioica..... 234
 gracilis..... 234
 major..... 234
 perennis..... 234
 rubra..... 234
Utricularia..... 190
 cleistogama..... 190
 subulata..... 190
 var. *cleisto-*
 gama..... 190
Urticastrum..... 234
 divaricatum..... 234
Uvularia..... 104
 grandiflora..... 104
Vaccaria..... 292, 293
Vagnera..... 109
 racemosa..... 109
 stellata..... 109
 trifolia..... 109
Valaea glauca..... 32
Valentinia..... 110
Vallisneriaceae..... 22
Vallisneria spiralis..... 22
Validallium..... 104
 tricoccum..... 105
Venosae..... 226
Verbasculum..... 209, 213
Vinca..... 150
Vinea pusilla..... 151
 rosea..... 151
 species..... 151
Veronica sylvestris..... 293
Viola..... 207, 208, 209, 210, 211, 215

- Viola affinis*.....83, 84, 85, 213
ampliata.....211
arvensis.....134, 217
blanda.....88, 208
canadensis.....208, 209
 210, 215, 216
candidula.....85, 88,
 90, 91, 209, 213
communis.....82, 84
cucullata.....80, 84,
 199, 200, 208, 211, 212
cuspidata.....213
eriotarpa.....208, 214
incognita.....208, 214
lanceolata.....208, 213
martia.....211
nigra.....211
odorata.....209, 211
officinarum.....211
obliqua.....79, 80,
 81, 82, 83, 84, 85, 199
ovata.....211
papilionacea.....83, 212
palmata.....209, 212
Pallens.....214
pedata.....209, 211
 var. inormata.....210
pedatifida.....88
peramoena.....88
populifolia.....212
primulaefolia.....208, 209, 213
pubescens.....208, 209, 214, 215
 var. scabriuscula.....215
purpurea.....211
Rafinesquii.....134, 217
rostrata.....88, 90,
 208, 210, 215, 216
rotundifolia.....209
Viola sagittata.....213
 var. ovata.....211
scabriuscula.....208, 215
striata.....208, 209, 210, 216
tenella.....217
tricolor.....134, 210, 211, 217
variabilis.....212
Viorna.....323
Vitex.....155
Viticella...155, 156, 157, 158, 191
 florida.....156
 microcalyx.....158
Volubilis nigra.....242
Vulvaria.....275
 ambrosioides.....275
 Botrys.....275
Warnera.....327
 canadensis.....327
Wolffia.....41
 brasiliensis.....42
 columbiana.....42
Wolffia.....41
 punctata.....42
Wulfenia.....188
 Bullii.....189
 rubra.....188, 189
Wulffia.....41
Xiphion.....115
Xylosteum.....191
Xyrideae.....98
Xyridaceae.....98
Xyridales.....98
Xyris.....98, 99, 115
 flexuosa.....99
Yulania.....297



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